TM 9-2355-444-10

TECHNICAL MANUAL

OPERATOR'S MANUAL
FOR

MINE RESISTANT AMBUSH PROTECTED (MRAP) M1266A1 (NSN 2355-01-620-0199) (EIC XXX)

DISTRIBUTION STATEMENT C – Distribution authorized to U.S. Government Agencies and their contractors only for Specific Authority as determined on 15 December 2014. Other requests for this document shall be referred to TACOM Life Cycle Management Command, ATTN: AMSTA-LCC-MM, Warren, MI 48397-5000.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et. seq.) or the Export Administration Act of 1979, as amended, Title 50, U.S.C., App. 2401 et. seq. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25.

DESTRUCTION NOTICE – Destroy by any method that will prevent disclosure of contents or reconstruction of contents.

HEADQUARTERS, DEPARTMENT OF THE ARMY

30 JANUARY 2015

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within the technical manual.

FIRST AID

First aid is the emergency care given to the sick, injured, or wounded before being treated by medical personnel. First aid data can be found in FM 4-25.11. This manual contains procedures for all types of casualties and the measures described are for use by all service members. Service members may be able to save a life, prevent permanent disability, or reduce long periods of hospitalization by knowing WHAT to do, WHAT NOT to do, and WHEN to seek medical assistance.

EXPLANATION OF GENERAL SAFETY ICONS

EAR PROTECTION – headphones over ears shows that noise level will harm ears.

ELECTRICAL – electrical wire to arm with electricity symbol running through body shows that shock hazard is present.

ELECTRICAL – electrical wire to hand with electricity symbol running through hand shows that shock hazard is present.

EYE PROTECTION – person with goggles shows that the material will injure the eyes.

HEAVY OBJECT – human figure stooping over heavy object shows physical injury potential from improper lifting technique.

HEAVY PARTS – heavy object on human figure shows that heavy parts present a danger to life or limb.

HEAVY PARTS – foot with heavy object on top shows that heavy parts can crush and harm.

WARNING SUMMARY – (Continued)

HEAVY PARTS – hand with heavy object on top shows that heavy parts can crush and harm.

HEAVY PARTS – heavy object pinning human figure against wall shows that heavy, moving parts present a danger to life or limb.

HOT AREA – hand over object radiating heat shows that part is hot and can burn.

MOVING PARTS – human figure with an arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.

MOVING PARTS – hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.

MOVING PARTS – hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.

SHARP OBJECT – pointed object in foot shows that a sharp object presents a danger to life or limb.

SHARP OBJECT – pointed object in hand shows that a sharp object presents a danger to life or limb.

SHARP OBJECT – pointed object in hand shows that a sharp object presents a danger to life or limb.

SLICK FLOOR – wavy line on floor with legs prone shows that slick floor presents a danger for falling.

GENERAL SAFETY WARNINGS

WARNING SUMMARY – (Continued)

WARNING

GENERAL

Before performing any maintenance procedure, ensure vehicle is parked on level surface, engine is off, parking brake is set, transmission is in NEUTRAL (N), and wheels are chocked. Wear eye protection and stay clear of rotating parts and hot surfaces. Make sure all electrical tools are grounded. Use extreme caution when working under vehicle. Keep first-aid and fire-control equipment available during all operation and maintenance procedures. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

The transmission will engage without the application of the service brake. Ensure service brake is applied when shifting the transmission from NEUTRAL (N) into any gear. Failure to comply may result in injury or death to personnel and/or damage to equipment.

WARNING

AIR SYSTEM

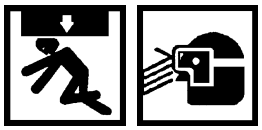
Air system is under pressure. Wear safety goggles and gloves. Do not disconnect any air line or fitting until system pressure has been relieved. Hoses may whip and injure personnel, and air pressure can penetrate skin. Failure to comply may result in serious injury or death to personnel.

Do not operate vehicle with air pressure system loss. Vehicle spring brakes will engage if air system pressure is below 45 psi (310 kPa). Rear brakes engaging while vehicle in motion may result in a skid or rollover. Failure to comply may result in death or serious injury to personnel and damage to equipment.

If OVERSPEED signal is displayed, take immediate action to reduce speed or select higher pressure by pressing appropriate switch. Failure to comply may result in serious injury or death to personnel and damage to equipment.

If CHECK TIRE warning indicator is displayed, stop vehicle in a safe place and identify extent of tire damage. Failure to comply may result in serious injury or death to personnel and damage to equipment.

WARNING



BRAKES

Never coast downhill. Service brakes alone should not be used to control speed on major downgrades. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY – (Continued)

Check air brake system function while vehicle is on a firm level surface clear of personnel, buildings, and equipment. Failure to comply may result in damage to equipment or serious injury or death to personnel and/or damage to equipment.

Do not operate vehicle when brakes are caged. Caged brakes will result in loss of the parking brake and degrade braking system performance. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Let air pressure build in both tanks to 110 to 130 psi (758 to 896 kPa) before releasing the parking brake. Do not operate vehicle with air pressure system loss. Low air pressure may affect vehicle braking capability. Failure to comply may result in injury or death to personnel.

Anti-lock Brake System (ABS) wheel sensors and brake caliper assemblies are exposed and must be kept free of mud, dirt, and debris as often as possible. Failure to comply can cause the equipment (brake) to fail or degrade, which may result in serious injury or death to personnel and damage to equipment.

Do not operate vehicle with air system pressure loss. Vehicle spring brakes will engage if air system pressure is below 45 psi (310 kPa). Rear brakes engaging while vehicle in motion may result in a skid or rollover. Failure to comply may result in death or serious injury to personnel and damage to equipment.

WARNING

CENTER OF GRAVITY

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoid side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

WARNING

COMPRESSED AIR

Do not use compressed air exceeding 30 psi (207 kPa) for cleaning purposes. Use only with effective chip-guarding and personal protective equipment, including safety goggles and gloves. Failure to comply may result in serious injury or death to personnel.

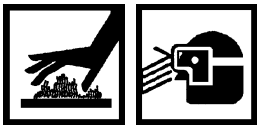
WARNING SUMMARY – (Continued)

WARNING

CONTACT

To prevent falls from the sides, rear, or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

WARNING

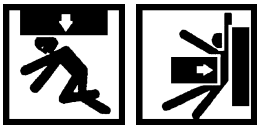


COOLING SYSTEM/RADIATOR

Cooling system components become pressurized and extremely hot during normal operation. To prevent serious injury from hot coolant or scalding steam that escapes when removing radiator cap, radiator overflow cap, or deaeration tank pressure cap; ensure to allow engine to cool for 15 minutes, wrap a thick cloth around cap to be removed, loosen cap slowly one-quarter to one-half turn counterclockwise, and pause to allow pressure to release, and then continue to turn cap counterclockwise to remove.

Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

WARNING



DOORS

The side doors are heavy. Ensure that no one is standing directly beside them before opening and closing. Use caution when opening o closing the doors, especially when the vehicle is parked on an incline. Ensure all body parts and gear are clear before closing side doors. Failure to comply may result in injury or death to personnel and/or damage to equipment.

Caution should be used when opening and closing the side doors, emergency hatch, and rear door/ramp. Soldiers entering or exiting the vehicle should ensure that all body parts are clear of the doors and ramps when closing. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Do not use side door handles as hand grip to enter or exit vehicle cabin. Use of any side door handle as hand grip may cause air-assisted side door to open or close. Failure to comply may result in injury or death to personnel.

WARNING SUMMARY – (Continued)

Notify Field Level Maintenance following emergency operations so that vehicle can be inspected and restored to proper operating condition. Failure to comply may result in injury or death to personnel.

Exterior armor doors are heavy. Use caution when opening and closing exterior armor doors. Failure to comply may result in serious injury or death to personnel.

Access door can swing free when exterior armor door is opened or closed. Ensure body parts are clear when lowering and raising exterior armor door. Failure to comply may result in injury to personnel.

WARNING

DRIVING/OPERATING USUAL/UNUSUAL CONDITIONS

Noise levels exceed 85-decibel limit. Exposure to constant, elevated noise levels could cause permanent hearing damage. Single hearing protection is required in and around operating vehicle. Double hearing protection is required during weapons firing. Failure to comply may result in injury to personnel.

The driver's field of view is limited. Ensure that mirrors are positioned to allow for a maximum range of vision prior to vehicle operation. Ground guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of the vehicle and remain within view of the driver. Failure to comply may lead to a vehicle collision/accident resulting in serious injury or death to personnel and/or damage to equipment.

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Driver must visually check to make sure all areas of the vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury or death to personnel.

Driver vision is limited. When maneuvering through or attempting to park vehicle in congested or confined areas, always use ground guides. Refer to FM 21–60 Visual Signs. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Keep feet off ribs during transit when there is an Improvised Explosive Device (IED) threat. Failure to comply may result in serious injury or death to personnel.

Do not exceed the rated payload of the vehicle. This will result in overloading of axles and degradation of brakes that may lead to an accident. Failure to comply may result in injury or death to personnel an/or damage to equipment.

Air inlet must be open and the ventilation system must be circulating fresh or recirculated air within the vehicle. Operation with inadequate ventilation (ventilation system set improperly) could create an oxygen deficient atmosphere. which could lead to occupant incapacitation. Failure to comply may result in serious injury to personnel.

WARNING SUMMARY – (Continued)

Do not use cruise control system in heavy traffic or on roads that are winding, snow or ice covered, or have a slippery or loose surface. Unpredictable driving conditions may cause wheel slippage and loss of vehicle control. Failure to comply may result in serious injury or death to personnel.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in injury to personnel and/or damage to equipment.

Locked gears may limit vehicle speed or prohibit vehicle from ascending grades and traversing certain terrains if transmission is locked in gear. Failure to comply may result in serious injury or death to personnel.

Always ascend hills with extreme care and approach slopes head on. Do not shift into a lower gear than is necessary to maintain momentum. Attempt to maintain a constant engine speed and do not come to a complete stop while ascending hill. Use good judgment. If hill appears too steep to climb, do not attempt. Failure to comply may result in vehicle rollover or rollback, causing serious injury or death to personnel and/or damage to equipment.

Always descend hills with extreme care and approach slopes head on. Do not shift into a higher gear than necessary to control vehicle speed. Attempt to maintain a constant engine speed and do not come to a complete stop while descending a hill. Use good judgement. If hill appears too steep to descend, do not attempt. Failure to comply may result in vehicle rollover or runaway, causing serious injury or death to personnel and/or damage to equipment.

Ensure transfer case is in XFER LOW and place AXLE switch in ON position before ascending grade. Stop vehicle before beginning ascent. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Stop vehicle before beginning descent. Ensure transfer case is in XFER LOW and FRONT AXLE switch is ON before descending grade. Failure to comply may result in damage to equipment and serious injury or death to personnel.

Do not apply steady pressure to service brake during descent. Applying steady pressure to service brake during descent will cause brake system overheating and lost of system air pressure that can cause brakes to lock-up. Failure to comply may result in serious injury or death to personnel.

Slopes and hills normally traversable may become slippery when covered with mud, sand, or snow. Approach slopes head-on and avoid side slopes whenever possible, vehicle may roll over. Failure to comply may result in serious injury or death to personnel and damage to equipment

Snow-covered slopes may sometimes be climbed with only moderate acceleration. Over-acceleration may cause wheels to spin and dig deeper which may cause loss of vehicle control or vehicle to bounce. Steer vehicle straight as possible until over hill. Steering to left or right may cause vehicle to skid sideways or possible overturn. Failure to comply may result in serious injury or death to personnel and damage to equipment

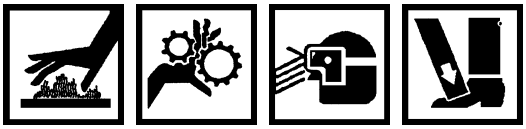
WARNING SUMMARY – (Continued)

Do not exceed 20 mph (32 kph) when driving on sand, mud, or soft terrain. It may result in loss of vehicle control. If vehicle exceeds 28 mph (45 kph) when DIFF LOCK is engaged, DIFF LOCK will disengage, light on switch will flash rapidly, and alarm will sound five times indicating wheel speed was exceeded. To avoid loss of vehicle control, slow vehicle and cycle DIFF LOCK switch to engage DIFF LOCK. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Ensure the rear differential on vehicle is locked before driving on sand, mud, or soft terrain to provide maximum traction and equal power to both rear wheels. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Driving in mud can degrade vehicle braking and speed up brake pad wear. If braking degrades while operating in mud, clean brakes by driving vehicle approximately 500 ft (153 m) with service brake applied. This must be done with brake rotors totally out of mud so the drying action can take place. If braking is not restored by drying brakes, stop vehicle as soon as possible and notify Field Level Maintenance. Failure to comply will result in impaired braking ability that can cause serious injury or death to personnel and/or damage to equipment.

WARNING



ENGINE

Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.

Keep hands and clothing clear of moving parts in the engine compartment. Rotating parts can cause severe injury to personnel. Ensure that all guards are in place and do not wear loose clothing when working in engine compartment. Always check to ensure that the engine compartment is clear of personnel and obstructions before starting the engine. Failure to comply may result in injury or death to personnel.

WARNING

EXHAUST

Exhaust system components can be hot. Do not touch with bare hands or allow contact with other skin surface. Wear protective work gloves and long sleeves. Failure to comply may result in injury to personnel.

WARNING SUMMARY – (Continued)

WARNING

EXTREME TEMPERATURES

In extreme temperature environments, follow work-rest schedules as well as the guidance of TB-MED 507, Heat Stress Control and Heat Stress Management, and TB-MED 508, Prevention and Management of Cold Weather Injuries. Failure to comply may result in injury to personnel.

WARNING

FLUIDS

Fluids pose a slip hazard if spilled. Ensure spills are cleaned up immediately and dispose of material in accordance with standard operating procedures. Failure to comply may result in serious injury or death to personnel.

WARNING

FORDING

Do not attempt to ford water deeper than 36 in. (91 cm), including wave height. Ensure bottom surface under water is firm. Reduce speed to 5 mph (8 kph) or less during fording. Unless absolutely necessary, do not stop while driving in the water. Ensure brakes are dry and operating correctly after fording before commencing normal driving. Failure to comply may result in injury to personnel and/or damage to equipment.

WARNING

GUNNER

Ensure gunner restraint harness is worn properly at all times. Harness should be free of twists. Twisted straps can cause injury when gunner moves suddenly in harness. Gunner should hold onto weapon or other supports to maintain stability at all times. Failure to comply may result in serious injury to personnel.

Do not sit on gunner platform while vehicle is moving. The gunner platform does not absorb the energy in a blast event. Failure to comply may result in serious death or injury to personnel.

WARNING SUMMARY – (Continued)

Ensure straps are not kinked, knotted, damaged, cut, or frayed before fastening to platform. If damaged, cut, or frayed, see Field Level Maintenance for replacement. Failure to comply may result in serious injury or death to personnel.

When adjusting Blast Energy Attenuating Turret Seat (BEATS) for use, ensure both feet are square on gunner platform and adjust seat back as far forward as possible to reduce the risk of injury. Failure to comply may result in serious injury or death to personnel.

The Improved Gunner Restraint System (IGRS) is a protection system that includes a harness, tail strap, rigidly mounted retractor, and possibly a turret seat assembly. The IGRS is considered a personal safety restraint device. Crew members must be trained in rollover drills. The IGRS along with the rollover training is a safety enhancement for turreted vehicle systems. Do not rely solely on the IGRS to prevent injury in the event of a rollover. The IGRS is designed to prevent the gunner from ejecting from the vehicle during a dynamic event, it will not pull the gunner back into the vehicle. Failure to comply may result in injury or death to personnel.

Using commercial IGRS or mixing or modifying approved IGRS equipment to include restraint harness and retractor is unauthorized. Wearing the IGRS in any manner other than directed is not allowed. Failure to comply may result in injury or death to personnel.

Ensure gunner platform is securely locked in full upright position. Locking gunner platform at lower angles does not ensure a stable platform for gunner operation. Failure to comply may result in serious injury or death to personnel.

WARNING

HEAVY LIFTING

Prior to moving heavy components with assistant, clear path of travel and clear personnel from area. Use extreme caution if lifting objects overhead or backing up. Stop and lower load as soon as possible. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

WARNING

HOOD

Hood requires two-person lift. Keep arms and hands clear of hood when operating. Be aware of pinch point hazards and ensure fingers and hands are kept clear of these areas while opening and closing hood. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel.

WARNING SUMMARY – (Continued)

WARNING

INCLINOMETER

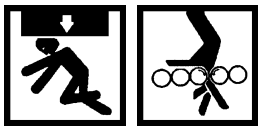
Inclinometers measure the vehicle side angles of slope/tilt. Monitor inclinometer while traversing uneven terrain. Failure to comply may result in rollover during vehicle movement, causing serious injury or death to personnel and/or damage to equipment.

WARNING

LIGHTS

Support front passenger light before unlatching retaining bracket latch to prevent from crew light from free-falling. Failure to comply may result in serious injury to personnel.

WARNING



LITTER

Only perform this procedure when vehicle is stationary and on level surface. Failure to comply may result in serious injury or death to personnel.

Keep hands and feet clear of litter trolley rails during use. Do not use litter trolley rails as hand grip to enter or exit vehicle. Failure to comply may result in injury to personnel.

Litter lift winch is not equipped with automatic stop for pay in or pay out and must be stopped manually. Failure to comply may result in injury to personnel or equipment failure.

Keep hands clear of litter lift rail during operation. Failure to comply may result in injury to personnel.

Maximum lifting capacity of litter lift winch is 500 lb (227 kg). Exceeding weight limit may result in injury to personnel or equipment failure.

Ensure litter handles are clear of fixed metal brackets in vehicle during litter lifting. Failure to comply may result in injury to personnel and damage to litter assembly.

Use extreme caution when raising and lowering litter as multiple pinch points exist between litter, litter trolleys, and litter trolley rails. Failure to comply may result in injury to personnel or equipment damage.

Litter with personnel is heavy. Do not attempt to lift without assistant. Prior to moving litter, clear path of travel. Failure to comply will result in serious injury to personnel.

WARNING SUMMARY – (Continued)

Keep personnel clear of litter-lift moving parts. Ensure litter and patients are properly secured and clear of rear door/ramp and all other obstacles during litter-lift movement. Failure to comply may result in severe injury or death to personnel.

WARNING

OBJECTIVE GUNNERS PROTECTION KIT (OGPK)

Front deflector shield is extremely heavy and requires two-person lift. Use extreme care when installing or removing front deflector shield in pintle. Failure to comply may result in serious injury or death to personnel.

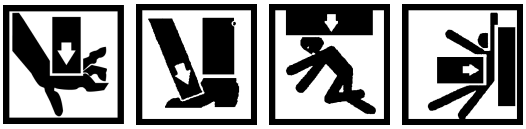
Improved Turret Drive System (ITDS) electrical connector must be disconnected prior to turret operations. Traversing turret without disconnecting electrical connector can damage connector and cause electrical shock. Failure to comply may result in serious injury or death to personnel and damage to equipment.

WARNING

PINTLE HOOK

Keep hands away from pintle hook when aligning lunette eye or connecting and disconnecting tow bar. Hands and fingers can get caught and crushed between pintle hook and tow bar. Failure to comply may result in serious injury or death to personnel.

WARNING



REAR DOOR/RAMP

Ensure no one is behind vehicle when lowering rear door/ramp. Use extreme caution when using emergency rear door/ramp release to ensure that no one is struck by door as it falls open. Sound horn before lowering rear door/ramp. Do not operate rear door/ramp while vehicle is in motion. Failure to comply may result in serious injury or death to personnel.

Ensure plunger is in center position before operating rear door/ramp. Failure to place plunger in center position will result in abnormal operation and/or failure to operate. Failure to comply may result in serious injury to personnel and/or damage to equipment.

Never touch any part of a hydraulic assembly before ensuring system is depressurized. The rear door/ramp actuating system operates under high pressure. Pressurized hydraulic fluid can penetrate skin and body tissue. Contact with pressurized hydraulic fluid requires prompt medical attention, even If an injury is not evident. Failure to comply may result in serious injury, amputation, or death to personnel.

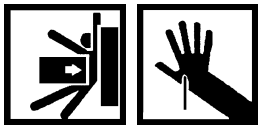
WARNING SUMMARY – (Continued)

WARNING

RUN-FLAT INSERTS

Do not drive vehicle farther than 30 miles (48 km) or exceed speeds of 30 mph (48 kph) while operating on the run-flat inserts. Vehicle control is greatly reduced. Reduce vehicle speed and loading, especially when traveling on secondary roads, cross-country, or in high traffic areas. Failure to comply may cause a tire fire or loss of vehicle control, which may result in serious injury or death to personnel and/or damage to equipment.

WARNING



SEAT BELT

Personnel must utilize seat restraints, and each occupant must ensure that their seat restraint is properly fastened and adjusted. Avoid twisting the straps when putting the seat belt on and be sure to remove slack so the harness provides maximum protection in the event of an accident. Failure to comply may result in death or injury to personnel.

Always use seat belts when vehicle is in operation. Failure to comply may result in serious injury or death to personnel.

Seat belts cutters are extremely sharp. Use caution when cutting seat belt straps, always cut away from the body. Failure to comply may result in serious injury or death to personnel.

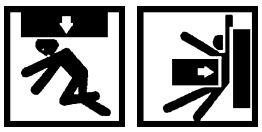
WARNING

SEAT

Do not adjust headrest while operating vehicle. Failure to comply may result in injury or death to personnel.

WARNING SUMMARY – (Continued)

WARNING



SIDE DOORS/EMERGENCY HATCH

The side doors and/or emergency hatch are heavy. Ensure that no one is standing directly behind them before opening and closing. Use caution when opening or closing side doors, especially when the vehicle is parked on an incline. Ensure emergency hatch is properly secured in both the open or closed position. Do not operate vehicle with emergency hatch open. Ensure that all body parts and gear are clear before closing side doors and/or emergency ramp. Failure to comply may result in injury or death to personnel.

Emergency hatch is spring-assisted. If spring should fail, hatch is heavy. Do NOT release spring tension. Failure to comply may result in serious injury or death to personnel.

Do not use side door handles as hand grip to enter or exit vehicle cabin. Use of any side door handle as hand grip may cause air-assisted side door to open or close. Failure to comply may result in injury or death to personnel.

Emergency hatch is heavy. Ensure hatch is properly secured in both the open or closed position. Do not operate vehicle with emergency hatch open. Ensure that all body parts and gear are clear before closing emergency hatch. Failure to comply may result in serious injury or death to personnel.

Ensure hands and feet are clear of the Rocket Propelled Grenade (RPG) nets before opening or closing the side doors. Hands and feet can become entangled in the RPG nets. Failure to comply may result in serious injury to personnel and/or damage to equipment.

WARNING

SLIDING/GUNNER HATCHES

Gunner hatch is extremely heavy. Use caution when opening and closing. Keep arms and hands clear of hatch when closing. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Gunner hatch can only be opened or closed when vehicle is stationary and on level surface. Do not attempt to open or close the hatch when vehicle is in motion. Ensure latch locks are secured into place in the open or closed positions before vehicle starts moving. Failure to comply may result in serious injury to death to personnel and/or damage to equipment.

Sliding hatch (roof) is extremely heavy. Use caution when opening and closing. Keep all body parts clear of hatch when opening and closing to avoid injury. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

WARNING SUMMARY – (Continued)

Sliding hatch can move if not locked in closed or full open position. Do not operate vehicle while sliding hatch is not locked in closed or full open position. Do not operate vehicle if sliding hatch is in the center position. It does not lock and can continue to slide. Failure to comply may result in serious injury or death to personnel.

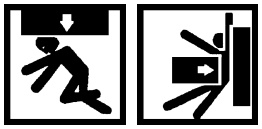
Ensure gunner hatch is completely locked in the open position before moving vehicle with gunner in position. Use extreme caution when standing in gunner hatch while vehicle is in motion. Gunner should be holding onto weapon or other support to maintain stability at all times and shall wear a gunner restraint when vehicle is in motion. Failure to comply may result in serious injury or death to personnel.

There is not enough clearance between handle and task light to open sliding hatch to full open position using handle. Release handle and push sliding hatch by hand to full open position. Failure to comply may result in severe injury to personnel.

Front deflector shield is extremely heavy and requires two-person lift. Use extreme care when installing or removing front deflector shield in pintle. Failure to comply may result in serious injury or death to personnel.

Be careful of flying dust and debris while in turret area. Wear safety goggles while in turret. Failure to comply may result in serious injury to personnel.

WARNING



STEERING WHEEL

Do not use steering wheel as hand grip to enter or exit vehicle cab. Use of steering wheel for hand grip may cause sudden violent jerking of vehicle or damage to adjustable steering wheel. When entering or exiting cab, use three-point contact system. Failure to comply may result in serious injury or death to personnel.

Ensure steering wheel tilt adjustment lever is in locked (neutral) position before driving vehicle. Do not adjust tilt or height of steering wheel while operating vehicle. Failure to comply may result in injury or death to personnel.

To prevent falls from the sides, rear, or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

WARNING

STOWAGE/CARGO

Ensure that stowed items do not interfere with the Automatic Fire Extinguishing System (AFES). Do not stow any items around the valve outlet port nozzle that may interfere with the proper operation of the AFES. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

WARNING SUMMARY – (Continued)

Under seat area is designated for stowage of properly packaged medical equipment only. Always ensure medical equipment stowed under seat is properly retained with stowage nets. Improper use may lead to seat failure during a blast event. Failure to comply may result in serious injury or death to personnel.

Do not modify seats, add attachments, or hang gear on seats. Failure to comply may lead to seat failure during a blast event resulting in injury or death to personnel.

Heavy objects/loads, such as tool boxes and heavy parts, must always be transported on the floor, with the weight distributed as equally as possible between left and right sides of vehicle. Heavy cabinets must always be mounted as low as possible, with the weight distributed as equally as possible between left and right sides of vehicle. Remember to consider the weight of items stored in cabinets. Heavy items must be positioned as low as possible, with weight distributed as equally as possible between left and right sides of vehicle. Failure to comply will decrease vehicle stability and increase risk of rollover, causing vehicle damage and possible injury or death to personnel.

WARNING

TIRE PRESSURES

Ensure tire pressures are properly maintained for normal operations unless or until road/terrain conditions require adjusted pressures. Incorrect or low air pressures can result in tire failures and could lead to an accident. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the Central Tire Inflation System (CTIS) Driver Display Module can help identify a tire problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment.

WARNING

TOWING

If brakes of disabled vehicle are inoperable, do not flat tow disabled vehicle. Notify Field Level Maintenance. Do not move towing vehicle, in a congested area, without assistance of ground guide. Ground guide must be visible to operator in a congested area. Ensure that all personnel are clear of vehicle before removing wheel chocks and starting to tow vehicle. Ensure that the service brake lights, emergency flashers, turn signals, and service brakes on the towed vehicle operate in coordination with the towing vehicles. Personnel must not occupy vehicle being towed. The maximum speed limit on unpaved roads when towing is 15 mph (24 kph). Terrain, weather, and other conditions may require reduced speeds. Avoid sharp turns. On paved roads, speeds may be increased to 25 mph (40 kph) if conditions permit. Prior to disconnecting tow bar, ensure that vehicles are on level surface with wheels chocked. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

WARNING SUMMARY – (Continued)

Vehicles with catastrophic damage to the front axle and suspension may require the axle to be properly secured to the chassis for safe recovery of the vehicle. Never attach safety chains to axles or suspension components that are no longer physically attached to the vehicle. Never cross the safety chains. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Towing disabled vehicle from rear is not authorized. The lack of rear lift tow provisions requires improvised rigging, which decreases vehicle stability. Failure to comply may result in serious injury and death to personnel and/or damage to equipment.

Keep hands away from pintle hook when aligning lunette eye or connecting and disconnecting tow bar. Hands and fingers can get caught and crushed between pintle hook and tow bar. Failure to comply may result in serious injury or death to personnel.

When performing like-vehicle towing operations, never proceed up or down grades greater than 20 percent. Towing over steep grades can cause vehicle to become unstable or roll over. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

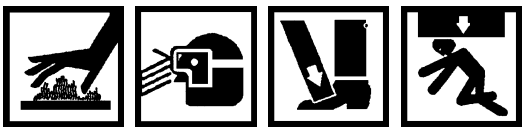
Tow bar weighs 300 lb. (136 kg). Do not attempt to lift tow bar without assistant and suitable lifting device. Failure to comply may result in serious injury or death to personnel.

Ensure that the service brake lights, emergency flashers, turn signals, and service brakes on towed equipment operate in coordination with towing vehicle. Failure to comply may result in injury or death to personnel.

Towing operators shall also consider the center of gravity of disabled vehicle when conducting towing operations in order to avoid roll over of towed vehicles. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

If disabled vehicle has no electrical power at the MAIN POWER switch or does not have air pressure through the quick disconnect coupling assemblies, cease towing operations and call for wrecker support. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

WARNING



TRANSFER CASE

During normal vehicle operation, transfer case and oil cooler can become very hot. Allow transfer case and oil cooler to cool prior to inspection. Wear safety goggles, work gloves, and protective clothing. Failure to comply may result in serious injury to personnel.

WARNING SUMMARY – (Continued)

WARNING

TRANSMISSION/TRANSMISSION-LIMP MODE

Use care when working with hot transmission and fluid. Wear protective goggles, work gloves, and long sleeves to avoid injury. Avoid contact with hot transmission oil or sump when inspecting transmission. If transmission oil temperature is above 220°F (104°C), allow transmission oil to cool before removing dipstick. Failure to comply may result in serious injury or death to personnel.

When operating a vehicle with the transmission in LIMP mode DO NOT rely on the parking brake to hold the vehicle in place with the engine running and the transmission in gear. The operator service brakes must also be applied. Failure to comply may result in injury or death to personnel.

When operating the vehicle in the transmission LIMP mode, the operator must stay in vehicle. Limp mode locks transmission is whatever gear it was operating in. Operator cannot use parking brake to leave vehicle. Use only the service brakes to control vehicle speed. Failure to comply may result in serious injury or death to personnel.

WARNING

VEE WINDOWS

Each Vehicle Emergency Egress (VEE) window weighs 287 lb (130 kg). Use caution when removing VEE window. If vehicle is on its side, remove the window furthest from the ground first (top window). Failure to comply may result in serious injury or death to personnel.

When egressing the vehicle through the window opening, removal of personal gear may be required. If necessary, personnel should egress with their gear in hand while in tactical conditions. Failure to comply may result in serious injury or death to personnel.

WARNING

WINCH OPERATIONS

Do not use parts other than those specified for the system being serviced. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Vehicle curb weight exceeds winch capacity. Do not use winch for vehicle self-recovery operations. Failure to comply may result in serious injury or death to personnel and damage to equipment.

WARNING SUMMARY – (Continued)

Do not hold winch cable hook when pulling out or reeling in winch cable. Use cloth strap to hold winch cable hook. Failure to comply may result in serious injury to personnel.

Do not exceed rated pulling capacity of winch. Winch is rated to pull maximum load of 18,000 lb (8165 kg) when pulling first layer of winch cable onto winch drum. Failure to comply may result in serious injury or death to personnel and damage to equipment.

During winching operations, all personnel must remain either inside the vehicle or outside a circled area with a radius that is twice the length of the extended winch rope when measured from both the winch and the load point. Failure to comply may result in serious injury or death to personnel.

When operating winch, do not wear loose clothing; it can get caught in winch cable as winch cable winds around spool drum. Keep a minimum of five wraps of winch cable on drum when using winch. Fewer wraps may cause winch cable to pull free of drum and release load. Failure to comply may result in serious injury or death to personnel and damage to equipment.

When operating winch, ensure there are no objects in path of winch cable or vehicle. To prevent accidental release, make sure pull-cable fitting is attached before removing mechanical lever lockpin. Failure to comply may result in serious injury or death to personnel.

Discontinue use of winch if Overload Interrupt (OLI) device is tripped. The OLI guards against overloading the motor, geartrain, and wire rope. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

All personnel involved in winch operations must wear safety goggles and heavy leather-palmed gloves when handling. Before removing winch cable from vehicle, check winch cable for damage such as frayed wires, binds, or kinks. If damaged, replace cable. A broken wire could cut through gloves and injure hand. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Avoid continuous side pulls that can pile up winch cable at one end of the drum. Ensure the clutch is fully engaged or disengaged. Never use winch to tow other vehicles. Never jog winch cable under load. Shock loads can momentarily exceed capacity of winch cable and winch. Never use winch to secure a load during transport. Never submerge winch in water. Disconnect remote when not in use and store in designated stowage place. Prolonged use of the winch without cooling will damage the motor. In addition, if the engine is idling during winching, the battery may drain faster than it is charging. Pay close attention to VOLTS gauge on Instrument Panel (IP) cluster. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

EXPLANATION OF HAZARDOUS MATERIALS ICONS

CHEMICAL – drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.

CRYOGENIC – hand in block of ice shows that the material is extremely cold and can injure human skin or tissue.

WARNING SUMMARY – (Continued)

EXPLOSION – rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.

FIRE – flame shows that a material may ignite and cause burns.

POISON – skull and cross bones shows that a material is poisonous or is a danger to life.

RADIATION – three circular wedges shows that the material emits radioactive energy and can injure human tissue.

VAPOR – human figure in a cloud shows that material vapors present a danger to life or health.

HAZARDOUS MATERIAL WARNINGS

WARNING

AUTOMATIC FIRE EXTINGUISHING SYSTEM

Do not disturb the pyrotechnic actuator and pressure switch; this will cause the extinguisher to discharge automatically. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

AFES/FSS extinguishers can move violently when discharging. Ensure extinguisher is properly secured during use. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Do not drop or strike AFES or FSS extinguishers. AFES or FSS extinguishers can discharge accidentally and chemical agent can escape through holes in side of AFES anti-recoil plug. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Replace portable fire extinguisher immediately after use, even if only partly used. Failure to comply may result in serious injury or death to personnel.

Exposure to dry chemical fire extinguisher may result in temporary breathing difficulty during and immediately after discharge. If possible, discharge fire extinguisher from outside cab. Ventilate cab thoroughly prior to reentry. If respiratory irritation or distress occurs, move victim to fresh air. Seek medical attention if irritation persists. Failure to comply may result in serious injury to personnel.

Extinguisher will be extremely cold after discharging and freeze skin. Avoid contact with chemical agent and do not touch extinguisher after use. Failure to comply may result in serious injury to personnel.

WARNING SUMMARY – (Continued)

Ensure optical fire sensors are kept clean. If the optical fire sensors are not kept clean, the AFES may not properly function in the event of a fire. Failure to comply may result in death or injury to personnel.

Operating the vehicle without BBU fully charged may result in the AFES not operating in the event of a power failure. If BBU is not charged, notify Field Level Maintenance. Failure to comply may result in serious injury to personnel.

WARNING

BATTERIES

Turn MAIN POWER switch OFF prior to performing maintenance on battery or electrical system. Wear safety goggles and long sleeves when working on or near batteries. Batteries contain corrosive acid and can produce explosive gases. Batteries supply electrical current that can cause burns and electrical shock. Avoid leaning over or onto battery. Do not wear jewelry and do not smoke or have open flame or spark near battery. Do not allow tools to contact battery box or battery terminals. Dispose of or recycle used batteries according to standard operating procedures and waste management/battery recycling resources. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

Battery acid must not contact eyes, skin, or clothing. If battery acid contacts eyes or skin, flush area with large amounts of water for 15 minutes and seek immediate medical attention. If swallowed, do not induce vomiting. Drink large amounts of water or milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention. Failure to comply may result in serious injury or death to personnel.

WARNING

CARBON MONOXIDE

Carbon monoxide is a colorless, odorless, and dangerous gas that deprives the body of oxygen and causes suffocation. Use the following precautions to avoid carbon monoxide poisoning. Failure to comply may result in permanent brain damage or death to personnel. Do not idle engine for long periods of time. If necessary to run engine in confined area during vehicle service, use proper equipment to vent exhaust gasses outside work area. Do not operate fuel fired heater in enclosed area without adequate ventilation. Do not sleep in vehicle with heater operating or engine idling. Do not sleep in vehicle with heater operating or engine idling. Notify Field Level Maintenance if exhaust fumes are detected in crew compartment while operating the vehicle. Be alert at all times for exhaust odors and symptoms of exposure to carbon monoxide, such as headaches, dizziness, loss of muscular control, apparent drowsiness, and coma. If symptoms are evident, move affected personnel to fresh air, keep them warm, do not permit physical exercise, administer artificial respiration (if necessary), and seek immediate medical attention.

WARNING

ELECTRICAL SYSTEM

WARNING SUMMARY – (Continued)

Use extreme caution when testing or working on or around electrical circuits. Always assume that electrical circuits are live. Electrical shock can occur upon contact with voltage high enough to cause current flow through muscles or nerves. On Direct Current (DC) systems, generally 1 mA of current can be felt, 5 mA can cause severe pain, 15 mA can cause loss of muscle control, and 70 mA can be fatal. Wear protective clothing; ensure skin, clothing, and surrounding areas are dry; do not wear jewelry; and touch only the insulated nonmetallic parts of electrical components and testing equipment. To prevent electrical arcing, avoid shorting electrical test probes and jumper wires. Electrical arcing can cause bright flashes of light, capable of causing temporary blindness. If electrical injury occurs, immediately shut off power supply and seek medical assistance. Failure to comply may result in serious injury or death to personnel.

Turn MAIN POWER switch OFF prior to performing maintenance on battery or electrical system. Wear safety goggles and long sleeves when working on or near batteries. Batteries contain corrosive acid and can produce explosive gases. Batteries supply electrical current that can cause burns and electrical shock. Avoid leaning over or onto battery. Do not wear jewelry and do not smoke or have open flame or spark near battery. Do not allow tools to contact battery box or battery terminals. Dispose of or recycle used batteries according to local procedures and waste management/battery recycling resources. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

Do not use a circuit breaker, fuse, or relay with higher amperage rating than listed for a particular application. Using higher amperage will overheat the electrical circuit, causing melted components and possible fire. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

WARNING

ENGINE FLUIDS

Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with standard operating procedures. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with standard operating procedures. Failure to comply may result in injury to personnel and environmental damage.

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with local site procedures and regulations. Handle, store, and dispose of drained fluids in accordance with local policies and procedures. Failure to comply may result in injury to personnel and environmental damage.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with local site procedures and regulations. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Ethylene glycol reacts with strong acids and oxidants and is combustible. Extinguish fires with alcohol foam, dry chemical, or carbon dioxide. Use goggles, gloves, and boots when handling. Keep run-off coolant water out of sewers and water sources. Failure to comply may result in injury to personnel and equipment or environmental damage.

WARNING

WARNING SUMMARY – (Continued)

FUEL

Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher readily available. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel.

Be alert at all times for the smell of fuel. Hot engines and components can ignite fuel. If fuel smell is detected while operating vehicle, shut down vehicle immediately. Failure to comply may result in damage to equipment and serious injury or death to personnel.

Do not fill fuel tank with engine running. Do not overfill fuel tank. Ensure to wear safety goggles and chemical resistant gloves prior to fueling operations. Clean fuel spills immediately according to local site procedures and regulations. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

Store diesel fuel in an approved container clearly marked DIESEL FUEL. Dispose of fuel in an approved container clearly marked DIESEL FUEL in accordance with standard operating procedures.

When draining fuel from fuel/water separator, wear safety goggles. Failure to comply may result in serious injury to personnel.

WARNING

FUEL FIRED HEATER

Do not operate fuel fired heater in an enclosed area without adequate ventilation. Switch OFF the fuel fired heater before refueling operations. Failure to comply can result in serious injury or death to personnel.

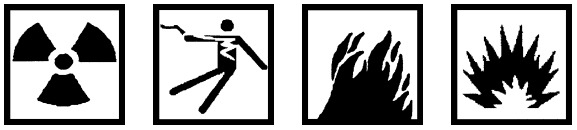
The diesel heater must be switched OFF before fuel tank on vehicle is filled and when vehicle is not in use. Failure to comply may result in serious injury or death to personnel.

WARNING

HERO/HERP/HERF

Hazards of Radiation (RADHAZ): Be aware of the radiation hazards of emitters on and near your vehicle. Each emitter will have specific standoff distances for personnel, ordnance, and fuel and includes any platform that utilizes similar radio frequency emitters, such as high frequency radios, jammers, and radars. Avoid contact with active antennas and maintain proper standoff distances from active antennas. Failure to comply may result in injury to personnel.

WARNING



RADIO

WARNING SUMMARY – (Continued)

Antenna emits radio frequency radiation. Do not touch active antenna and maintain proper standoff distances from active antennas. Failure to comply may result in serious injury or death to personnel.

Radio transmission is prohibited 50 feet (15 meters) from other vehicles refueling. Ensure radios are powered OFF before conducting fueling operations or maintenance activities. Electromagnetic interference from radio transmissions can cause explosions. Failure to comply may result in injury to personnel.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: Zero in the “Change No.” column indicates an original page or work package.

Date of issue for original manual is:

Original 30 JANUARY 2015

THE TOTAL NUMBER OF FRONT AND REAR PAGES IS 66 AND THE TOTAL NUMBER OF WORK PACKAGES IS 110 CONSISTING OF THE FOLLOWING:

Page/WP No.	Change No.	Page/WP No.	Change No.
Front Cover	0	WP 0035 (6 pgs)	0
Warning summary (24 pgs)	0	WP 0036 (2 pgs)	0
i-xxiv (24 pgs)	0	WP 0037 (4 pgs)	0
Chapter 1 title page	0	WP 0038 (4 pgs)	0
Blank	0	WP 0039 (12 pgs)	0
WP 0001 (8 pgs)	0	WP 0040 (6 pgs)	0
WP 0002 (44 pgs)	0	WP 0041 (16 pgs)	0
WP 0003 (4 pgs)	0	WP 0042 (2 pgs)	0
Chapter 2 title page	0	WP 0043 (4 pgs)	0
Blank	0	WP 0044 (8 pgs)	0
WP 0004 (24 pgs)	0	WP 0045 (4 pgs)	0
WP 0005 (8 pgs)	0	WP 0046 (6 pgs)	0
WP 0006 (2 pgs)	0	WP 0047 (12 pgs)	0
WP 0007 (2 pgs)	0	WP 0048 (2 pgs)	0
WP 0008 (4 pgs)	0	WP 0049 (4 pgs)	0
WP 0009 (4 pgs)	0	WP 0050 (4 pgs)	0
WP 0010 (2 pgs)	0	WP 0051 (4 pgs)	0
WP 0011 (4 pgs)	0	WP 0052 (4 pgs)	0
WP 0012 (4 pgs)	0	WP 0053 (4 pgs)	0
WP 0013 (4 pgs)	0	WP 0054 (10 pgs)	0
WP 0014 (2 pgs)	0	WP 0055 (2 pgs)	0
WP 0015 (2 pgs)	0	WP 0056 (6 pgs)	0
WP 0016 (2 pgs)	0	WP 0057 (6 pgs)	0
WP 0017 (4 pgs)	0	WP 0058 (2 pgs)	0
WP 0018 (4 pgs)	0	WP 0059 (2 pgs)	0
WP 0019 (4 pgs)	0	WP 0060 (2 pgs)	0
WP 0020 (6 pgs)	0	WP 0061 (4 pgs)	0
WP 0021 (2 pgs)	0	WP 0062 (4 pgs)	0
WP 0022 (2 pgs)	0	WP 0063 (2 pgs)	0
WP 0023 (4 pgs)	0	WP 0064 (2 pgs)	0
WP 0024 (4 pgs)	0	WP 0065 (8 pgs)	0
WP 0025 (4 pgs)	0	WP 0066 (2 pgs)	0
WP 0026 (4 pgs)	0	WP 0067 (6 pgs)	0
WP 0027 (12 pgs)	0	WP 0068 (4 pgs)	0
WP 0028 (10 pgs)	0	WP 0069 (2 pgs)	0
WP 0029 (4 pgs)	0	WP 0070 (2 pgs)	0
WP 0030 (4 pgs)	0	WP 0071 (2 pgs)	0
WP 0031 (2 pgs)	0	WP 0072 (2 pgs)	0
WP 0032 (2 pgs)	0	WP 0073 (26 pgs)	0
WP 0033 (4 pgs)	0	WP 0074 (16 pgs)	0
WP 0034 (4 pgs)	0	Chapter 3 title page	0

LIST OF EFFECTIVE PAGES/WORK PACKAGES

Blank....0
WP 0075 (2 pgs)....0
WP 0076 (2 pgs)....0
WP 0077 (6 pgs)....0
WP 0078 (14 pgs)....0
WP 0079 (4 pgs)....0
WP 0080 (2 pgs)....0
WP 0081 (6 pgs)....0
WP 0082 (6 pgs)....0
WP 0083 (4 pgs)....0
WP 0084 (8 pgs)....0
WP 0085 (6 pgs)....0
WP 0086 (4 pgs)....0
Chapter 4 title page....0
Blank....0
WP 0087 (2 pgs)....0
WP 0088 (146 pgs)....0
WP 0089 (10 pgs)....0
WP 0090 (4 pgs)....0
WP 0091 (8 pgs)....0
WP 0092 (4 pgs)....0
WP 0093 (4 pgs)....0
WP 0094 (2 pgs)....0
WP 0095 (4 pgs)....0
WP 0096 (8 pgs)....0
WP 0097 (4 pgs)....0
WP 0098 (2 pgs)....0
WP 0099 (2 pgs)....0
WP 0100 (2 pgs)....0
WP 0101 (2 pgs)....0
WP 0102 (8 pgs)....0
WP 0103 (10 pgs)....0
WP 0104 (2 pgs)....0
WP 0105 (2 pgs)....0
WP 0106 (14 pgs)....0
Chapter 5 title page....0
Blank....0
WP 0107 (2 pgs)....0
WP 0108 (26 pgs)....0
WP 0109 (2 pgs)....0
WP 0110 (4 pgs)....0
Index-1 – Index-3....0
Blank....0
Inside back cover....0
Back cover....0

HEADQUARTERS, DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 JANUARY 2015

TECHNICAL MANUAL

OPERATOR'S MANUAL
FOR

MINE RESISTANT AMBUSH PROTECTED (MRAP) M1266A1
(NSN 2535-01-620-0199) (EIC XXX)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any errors, or if you would like to recommend any improvements to the procedures in this publication, please let us know. The preferred method is to submit your DA Form 2028 (Recommended Changes to Publications and Blank Forms) through the Internet on the TACOM Unique Logistics Support Applications (TULSA) Web site. The Internet address is https://tulsa.tacom.army.mil. Access to all applications requires CAC authentication, and you must complete the Access Request form the first time you use it. The DA Form 2028 is located under the TULSA Applications on the left-hand navigation bar. Fill out the form and click on SUBMIT. Using this form on the TULSA Web site will enable us to respond more quickly to your comments and to better manage the DA Form 2028 program. You may also mail, e-mail, or fax your comments or DA Form 2028 directly to the U.S. Army TACOM Life Cycle Management Command. The postal mail address is U.S. Army TACOM Life Cycle Management Command, ATTN: AMSTA-LCL-IM / TECH PUBS, MS 727, 6501 E. 11 Mile Road, Warren, MI 48397-5000. The e-mail address is tacomlcmc.daform2028@us.army.mil.
The fax number is DSN 786-1856 or Commercial (586) 282-1856. A reply will be furnished to you.

DISTRIBUTION STATEMENT C – Distribution authorized to U.S. Government Agencies and their contractors only for Specific Authority as determined on 15 December 2014. Other requests for this document shall be referred to TACOM Life Cycle Management Command, ATTN: AMSTA-LCC-MM, Warren, MI 48397-5000.

WARNING – This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et. seq.) or the Export Administration Act of 1979, as amended, Title 50, U.S.C., App. 2401 et. seq. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25.

DESTRUCTION NOTICE – Destroy by any method that will prevent disclosure of contents or reconstruction of contents.

TABLE OF CONTENTS

Page No.
WP Sequence No.

HOW TO USE THIS MANUAL xxiii

CHAPTER 1.GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION

GENERAL INFORMATION . . . . . WP 0001–1
Figure 1. M1266A1 . . . . . WP 0001–1

EQUIPMENT DESCRIPTION AND DATA . . . . . WP 0002–1
Figure 1. Front Doors . . . . . WP 0002–3
Figure 2. Rear Ramp Controls - Front AFES and FSS Controls and VEE Windows . . . WP 0002–4
Figure 3. Gunner Hatch . . . . . WP 0002–4
Figure 4. Emergency Hatch . . . . . WP 0002–5
Figure 5. Roof. . . . . WP 0002–5
Figure 6. Ramp Rear Controls. . . . . WP 0002–6
Figure 7. Rear Ramp Release Valve . . . . . WP 0002–6
Figure 8. Rear Ramp. . . . . WP 0002–7
Figure 9. Rear Ramp Operation - Emergency Manual Override . . . . . WP 0002–7
Figure 10. Powertrain . . . . . WP 0002–8
Figure 11. Engine . . . . . WP 0002–9
Figure 12. Transmission . . . . . WP 0002–9
Figure 13. Transfer Case . . . . . WP 0002–10
Figure 14. Exhaust Pipe, Muffler, and Tailpipe . . . . . WP 0002–10
Figure 15. Rear Prop Shaft with U-Joint . . . . . WP 0002–11
Figure 16. Rear Axle . . . . . WP 0002–12
Figure 17. Front Axle. . . . . WP 0002–12
Figure 18. Steering Gears and Linkage . . . . . WP 0002–13
Figure 19. Exterior Electrical System . . . . . WP 0002–14
Figure 20. Horn . . . . . WP 0002–14
Figure 21. Batteries . . . . . WP 0002–15
Figure 22. ITDS . . . . . WP 0002–15
Figure 23. 110V Power Inverter, 110V Outlet, and NATO Slave Start Connector . . . WP 0002–16
Figure 24. 110V Power Inverter and Outlets . . . . . WP 0002–17
Figure 25. 110V Power Inverter Remote Switch . . . . . WP 0002–17
Figure 26. Fuse and Circuit Breaker Panels . . . . . WP 0002–18
Figure 27. Exterior Lighting Systems . . . . . WP 0002–19
Figure 28. Spotlight . . . . . WP 0002–19
Figure 29. Front Cab Light . . . . . WP 0002–20
Figure 30. Rear Passenger Lighting . . . . . WP 0002–20
Figure 31. Pneumatic (Air) System. . . . . WP 0002–21
Figure 32. Driver Pneumatic Cabin Door . . . . . WP 0002–22
Figure 33. Front and Rear Air Brake Chambers . . . . . WP 0002–22
Figure 34. CTIS . . . . . WP 0002–23
Figure 35. Compressed Air Storage Tank . . . . . WP 0002–24
Figure 36. Rear Gladhands . . . . . WP 0002–25
Figure 37. Air Compressor Fitting . . . . . WP 0002–25
Figure 38. ABS Wheel Speed Sensor and Tone Ring . . . . . WP 0002–26
Figure 39. Lift Eyes, Tie-Downs, Body, and Chassis System - Exterior . . . . . WP 0002–27
Figure 40. Winch . . . . . WP 0002–28

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

Figure 41. Fuel Fired Heater . . . . . WP 0002–28
Figure 42. Towing Connections . . . . . WP 0002–29
Figure 43. Rear Door/Ramp Pump Assembly . . . . . WP 0002–29
Figure 44. Emergency Hatch . . . . . WP 0002–30
Figure 45. Backup Alarm . . . . . WP 0002–30
Figure 46. Body and Chassis Interior . . . . . WP 0002–31
Figure 47. Communications Rack . . . . . WP 0002–31
Figure 48. Sliding and Gunner Hatches . . . . . WP 0002–32
Figure 49. Passenger and Medic Seat Belts . . . . . WP 0002–32
Figure 50. Passenger Floor Ribs . . . . . WP 0002–33
Figure 51. Litter and Straps . . . . . WP 0002–33
Figure 52. IGRS . . . . . WP 0002–34
Figure 53. BEATS . . . . . WP 0002–34
Figure 54. Driver and Commander Seats . . . . . WP 0002–35
Figure 55. AFES and FSS . . . . . WP 0002–35
Figure 56. AFES and FSS Control Panels . . . . . WP 0002–36
Figure 57. AFES Sensors . . . . . WP 0002–37
Figure 58. AFES and FSS Cylinders . . . . . WP 0002–38
Figure 59. LSS/HVAC . . . . . WP 0002–39
Table 1. Vehicle Weight . . . . . WP 0002–40
Table 2. Vehicle Dimensions . . . . . WP 0002–40
Table 3. Dimensions . . . . . WP 0002–40
Table 4. Performance . . . . . WP 0002–40
Table 5. Capacities . . . . . WP 0002–41
Table 6. Cooling System . . . . . WP 0002–41
Table 7. Engine Configuration . . . . . WP 0002–41
Table 8. Oil Filter . . . . . WP 0002–41
Table 9. Fuel System Configuration . . . . . WP 0002–41
Table 10. Electrical System . . . . . WP 0002–42
Table 11. Transmission . . . . . WP 0002–42
Table 12. Transmission Speeds . . . . . WP 0002–42
Table 13. Transfer Case . . . . . WP 0002–42
Table 14. Axles . . . . . WP 0002–42
Table 15. Brake System . . . . . WP 0002–42
Table 16. Wheels . . . . . WP 0002–42
Table 17. Tires . . . . . WP 0002–43
Table 18. Towing and Lifting . . . . . WP 0002–43
Table 19. Winch Cable . . . . . WP 0002–43
Table 20. Cabin . . . . . WP 0002–44
THEORY OF OPERATION . . . . . WP 0003–1

CHAPTER 2.OPERATOR INSTRUCTIONS

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS . . . . . WP 0004–1
Figure 1. IP Cluster Indicators . . . . . WP 0004–2
Figure 2. LSS/HVAC Control Panel . . . . . WP 0004–4
Figure 3. AFES and FSS Control Lamps and Switches . . . . . WP 0004–5
Figure 4. ITDS Controls . . . . . WP 0004–6
Figure 5. Cabin Mounted Foot Controls . . . . . WP 0004–7
Figure 6. Steering Wheel and Column Controls . . . . . WP 0004–8

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
Figure 7. MVLS	WP 0004–9
Figure 8. Transmission Gear Selector Display	WP 0004–10
Figure 9. CTIS, ENG BRAKE, and MIR HEAT Switches	WP 0004–11
Figure 10. IP Gauges and Switches	WP 0004–12
Figure 11. Go-Light Controls	WP 0004–14
Figure 12. CTIS DDM, REAR RAMP, DOME LAMPS Gauges and Switches	WP 0004–15
Figure 13. ENAB/OFF ROAD Switch	WP 0004–16
Figure 14. Ignition Switch	WP 0004–17
Figure 15. IP Cluster Gauges and Dimmer Switch	WP 0004–18
Figure 16. Cab Interior Light	WP 0004–19
Figure 17. Driver Interior Door Combat Lock Lever	WP 0004–20
Figure 18. 24V to 110V Inverter Switch	WP 0004–21
Figure 19. Remote Inverter Switch and Litter Lift Switch	WP 0004–22
Figure 20. Passenger Compartment Light Switch	WP 0004–23
Figure 21. Passenger Compartment Ramp Switch	WP 0004–23
Table 1. IP Cluster Indicators	WP 0004–2
Table 2. LSS/HVAC Control Panel	WP 0004–4
Table 3. AFES and FSS Controls	WP 0004–5
Table 4. ITDS Controls	WP 0004–6
Table 5. Cabin Mounted Foot Controls	WP 0004–7
Table 6. Steering Wheel and Column Controls	WP 0004–8
Table 7. MVLS	WP 0004–9
Table 8. Transmission Gear Selector Display	WP 0004–10
Table 9. CTIS, ENG BRAKE, and MIR HEAT Switches	WP 0004–11
Table 10. IP Gauges and Switches	WP 0004–12
Table 11. Go-Light Controls	WP 0004–14
Table 12. CTIS DDM, REAR RAMP, DOME LAMPS Gauges and Switches	WP 0004–15
Table 13. ENAB/OFF ROAD Switch	WP 0004–16
Table 14. Ignition Switch	WP 0004–17
Table 15. IP Cluster Gauges and Dimmer Switch	WP 0004–18
Table 16. Cab Interior Light	WP 0004–19
Table 17. Driver Interior Door Combat Lock Lever	WP 0004–20
Table 18. 24V to 110V Inverter Switch	WP 0004–21
Table 19. Remote Inverter Switch and Litter Lift Switch	WP 0004–22
Table 20. Passenger Compartment Light Switch	WP 0004–23
Table 21. Passenger Compartment Ramp Switch	WP 0004–23
OPERATION UNDER USUAL CONDITIONS - SIDE DOORS OPERATION	WP 0005–1
Figure 1. Side Door Open	WP 0005–2
Figure 2. Driver Side Grab Handles, Steps, and Interior Door Handle	WP 0005–3
Figure 3. Commander Side Grab Handles, Steps, and Interior Door Handle	WP 0005–3
Figure 4. Driver Side Combat Lock	WP 0005–4
Figure 5. Diver Side Combat Lock	WP 0005–5
Figure 6. Driver Side Grab Handles, Steps, and Interior Door Handle	WP 0005–6
Figure 7. Commander Side Grab Handles, Steps, and Interior Door Handle	WP 0005–7
Figure 8. Side Door Close	WP 0005–7
OPERATION UNDER USUAL CONDITIONS - DRIVER SEAT ADJUSTMENT	WP 0006–1
Figure 1. Driver Seat Adjustment Lever	WP 0006–1
Figure 2. Headrest Adjustment Lever	WP 0006–2

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

OPERATION UNDER USUAL CONDITIONS - PASSENGER SEAT ADJUSTMENT . . . . . WP 0007–1
Figure 1. Passenger Seat Release . . . . . WP 0007–1
Figure 2. Passenger Seat Lock . . . . . WP 0007–2
Figure 3. Passenger Seat . . . . . WP 0007–2

OPERATION UNDER USUAL CONDITIONS - MEDIC SEAT ADJUSTMENT . . . . . WP 0008–1
Figure 1. Medic Seat Release and Adjustment . . . . . WP 0008–2
Figure 2. Cushion Strap Latches and Strap Ends . . . . . WP 0008–3
Figure 3. Medic Seat Bottom in Stowed Position . . . . . WP 0008–3
Figure 4. Cushion Strap Latches and Strap Ends . . . . . WP 0008–4

OPERATION UNDER USUAL CONDITIONS - SEAT BELT OPERATION . . . . . WP 0009–1
Figure 1. Driver and Commander Seat Belt Operation . . . . . WP 0009–2
Figure 2. Passenger Seat Belt . . . . . WP 0009–3
Figure 3. Medic Seat Belt . . . . . WP 0009–4

OPERATION UNDER USUAL CONDITIONS - STEERING WHEEL ADJUSTMENT . . . . . WP 0010–1
Figure 1. Steering Wheel Tilt Adjustment Lever . . . . . WP 0010–1

OPERATION UNDER USUAL CONDITIONS - ENGINE START PROCEDURE - ABOVE 32°F (0°C) . . . . . WP 0011–1
Figure 1. Engine Starting . . . . . WP 0011–2
Figure 2. IP Cluster . . . . . WP 0011–2
Figure 3. IP Cluster . . . . . WP 0011–4

OPERATION UNDER USUAL CONDITIONS - NORMAL DRIVING PROCEDURE . . . . . WP 0012–1
Figure 1. Operating Controls . . . . . WP 0012–4

OPERATION UNDER USUAL CONDITIONS - ENGINE SHUTDOWN . . . . . WP 0013–1
Figure 1. Engine Shutdown and Parking . . . . . WP 0013–2
Figure 2. Wheel Chocks . . . . . WP 0013–3

OPERATION UNDER USUAL CONDITIONS - BRAKE SYSTEM AND ANTI-LOCK BRAKE SYSTEM (ABS) OPERATION . . . . . WP 0014–1
Figure 1. IP Gauges and Controls . . . . . WP 0014–2

OPERATION UNDER USUAL CONDITIONS - ENGINE BRAKE OPERATION . . . . . WP 0015–1
Figure 1. ENG BRAKE and Engine Brake Control Switches . . . . . WP 0015–1

OPERATION UNDER USUAL CONDITIONS - TRANSMISSION OPERATION . . . . . WP 0016–1
Figure 1. Transmission Controls . . . . . WP 0016–2

OPERATION UNDER USUAL CONDITIONS - FOUR-WHEEL DRIVE OPERATION . . . . . WP 0017–1
Figure 1. FRONT AXLE and XFER Switches . . . . . WP 0017–2

OPERATION UNDER USUAL CONDITIONS - REAR DOOR/RAMP OPERATION . . . . . WP 0018–1
Figure 1. Cabin Rear Door/Ramp Toggle Switch . . . . . WP 0018–2
Figure 2. Passenger Rear Door/Ramp Toggle Switch . . . . . WP 0018–3

OPERATION UNDER USUAL CONDITIONS - FUEL FIRED HEATER OPERATION . . . . . WP 0019–1
Figure 1. Timer Control Panel - Time and Day . . . . . WP 0019–2
Figure 2. Timer Control Panel - Manual Operation . . . . . WP 0019–2
Figure 3. Control Panel Display - Setting Memory . . . . . WP 0019–3
Figure 4. Control Panel Display - Using Preset Times . . . . . WP 0019–4

OPERATION UNDER USUAL CONDITIONS - 110V OUTLETS AND POWER INVERTER . . WP 0020–1
Figure 1. Stowage Box Doors . . . . . WP 0020–2
Figure 2. 110V Power Inverter . . . . . WP 0020–2
Figure 3. Remote Inverter Switch . . . . . WP 0020–3

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

Figure 4. 110V Outlets and GFCI . . . . . WP 0020–3
Figure 5. Outside Stowage Box 110V Outlet and GFCI . . . . . WP 0020–4
Figure 6. Remote Inverter Switch . . . . . WP 0020–4
Figure 7. 110V Power Inverter . . . . . WP 0020–5
Figure 8. Stowage Box Doors . . . . . WP 0020–6

OPERATION UNDER USUAL CONDITIONS - 110V POWER STRIP OPERATION . . . . . WP 0021–1
Figure 1. 110V Power Strip . . . . . WP 0021–2

OPERATION UNDER USUAL CONDITIONS - 12V AUXILIARY EQUIPMENT OUTLETS . . . WP 0022–1
Figure 1. Driver Side 12V Outlet . . . . . WP 0022–2
Figure 2. Commander Side 12V Outlet . . . . . WP 0022–2

OPERATION UNDER USUAL CONDITIONS - SLIDING HATCH (ROOF) . . . . . WP 0023–1
Figure 1. Sliding Hatch (Roof) Access . . . . . WP 0023–1
Figure 2. Sliding Hatch (Roof) Open . . . . . WP 0023–2
Figure 3. Sliding Hatch (Roof) Pawl and Interlocking Mechanism. . . . . WP 0023–3

OPERATION UNDER USUAL CONDITIONS - IMPROVED GUNNER RESTRAINT SYSTEM (IGRS) OPERATION . . . . . WP 0024–1
Figure 1. IGRS Straps . . . . . WP 0024–2
Figure 2. IGRS Anchor Strap . . . . . WP 0024–2
Figure 3. Tail Strap Adjustor Tab . . . . . WP 0024–3
Figure 4. IGRS Anchor Strap . . . . . WP 0024–3
Figure 5. IGRS Buckle . . . . . WP 0024–4

OPERATION UNDER USUAL CONDITIONS - BLAST ENERGY ATTENUATING TURRET SEAT (BEATS) OPERATION . . . . . WP 0025–1
Figure 1. BEATS . . . . . WP 0025–1
Figure 2. BEATS Adjustment . . . . . WP 0025–2
Figure 3. BEATS . . . . . WP 0025–3

OPERATION UNDER USUAL CONDITIONS - GUNNER PLATFORM . . . . . WP 0026–1
Figure 1. Cushion Removal . . . . . WP 0026–1
Figure 2. Gunner Platform Raised . . . . . WP 0026–2
Figure 3. Gunner Platform Lowered . . . . . WP 0026–2
Figure 4. Cushion Installation . . . . . WP 0026–3

OPERATION UNDER USUAL CONDITIONS - OBJECTIVE GUNNERS PROTECTION KIT (OGPK) OPERATION . . . . . WP 0027–1
Figure 1. Gunner Hatch . . . . . WP 0027–2
Figure 2. Gunner Hatch in Open Position . . . . . WP 0027–2
Figure 3. Close Gunner Hatch . . . . . WP 0027–3
Figure 4. Front Deflector Shield Installation . . . . . WP 0027–4
Figure 5. Front Deflector Shield Removal . . . . . WP 0027–5
Figure 6. Padding Installation . . . . . WP 0027–6
Figure 7. ITDS Electrical Connector Connect . . . . . WP 0027–8
Figure 8. ITDS Electrical Connector Disconnect . . . . . WP 0027–9
Figure 9. Turret Motor MANUAL Operation . . . . . WP 0027–10
Figure 10. Turret Motor POWER Operation . . . . . WP 0027–11
Figure 11. Lock Turret . . . . . WP 0027–12
Figure 12. Lock Weapon Mount . . . . . WP 0027–12

OPERATION UNDER USUAL CONDITIONS - LIFE SUPPORT SYSTEM (LSS)/HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) OPERATION . . . . . WP 0028–1

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

Figure 1. LSS/HVAC Controls . . . . . WP 0028–2
Figure 2. Soft Duct Vent Opening . . . . . WP 0028–3
Figure 3. LSS/HVAC Controls . . . . . WP 0028–4
Figure 4. Soft Duct Vent Opening . . . . . WP 0028–5
Figure 5. LSS/HVAC Controls . . . . . WP 0028–6
Figure 6. Soft Duct Vent Opening . . . . . WP 0028–7
Figure 7. LSS/HVAC Controls . . . . . WP 0028–8
Figure 8. LSS/HVAC Windshield Defrost Duct . . . . . WP 0028–9
Figure 9. Soft Duct Vent Opening . . . . . WP 0028–9
Figure 10. LSS/HVAC Controls . . . . . WP 0028–10

OPERATION UNDER USUAL CONDITIONS - FRONT PASSENGER LIGHT OPERATION . . WP 0029–1
Figure 1. Front Passenger Light Roof Mount Mode . . . . . WP 0029–2
Figure 2. Front Passenger Light Portable Mode . . . . . WP 0029–4

OPERATION UNDER USUAL CONDITIONS - REAR PASSENGER LIGHTS OPERATION . . WP 0030–1
Figure 1. Rear Passenger Dome Lamp Toggle Switch Operation . . . . . WP 0030–2
Figure 2. Rear Passenger Interior Light Switch Operation . . . . . WP 0030–2
Figure 3. Rear Passenger Dome Light . . . . . WP 0030–3
Figure 4. Rear Passenger Task Bar Light . . . . . WP 0030–3
Figure 5. Rear Passenger Task Light . . . . . WP 0030–4
Figure 6. Rear Passenger Dome Lamp Power OFF . . . . . WP 0030–4

OPERATION UNDER USUAL CONDITIONS - SPOTLIGHT OPERATION . . . . . WP 0031–1
Figure 1. Spotlight Controls . . . . . WP 0031–1
Figure 2. Spotlight . . . . . WP 0031–2
Figure 3. Spotlight Controls . . . . . WP 0031–2

OPERATION UNDER USUAL CONDITIONS - CRUISE CONTROL OPERATION . . . . . WP 0032–1
Figure 1. Cruise Control Switches . . . . . WP 0032–2

OPERATION UNDER USUAL CONDITIONS - HOOD OPERATION . . . . . WP 0033–1
Figure 1. Engine Hood and Latch . . . . . WP 0033–2
Figure 2. Safety Cables . . . . . WP 0033–2
Figure 3. Engine Hood and Latch . . . . . WP 0033–3

OPERATION UNDER USUAL CONDITIONS - VEHICLE FUELING OPERATION . . . . . WP 0034–1
Figure 1. Exterior Fuel Tank Armor Access Door Open . . . . . WP 0034–3
Figure 2. Fuel Tank Cap Removal . . . . . WP 0034–3
Figure 3. Fuel Tank Cap Installation . . . . . WP 0034–4
Figure 4. Exterior Fuel Tank Armor Access Door Close . . . . . WP 0034–4

OPERATION UNDER USUAL CONDITIONS - CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION . . . . . WP 0035–1
Figure 1. Empty Load Displayed . . . . . WP 0035–2
Figure 2. Partial Load Displayed . . . . . WP 0035–2
Figure 3. Full Load Displayed . . . . . WP 0035–3
Figure 4. HY Displayed . . . . . WP 0035–3
Figure 5. CC Displayed . . . . . WP 0035–4
Figure 6. SS Displayed . . . . . WP 0035–4
Figure 7. E Displayed . . . . . WP 0035–5

OPERATION UNDER USUAL CONDITIONS - RUGGED ALL-PURPOSE CARGO CARRIER (RACC) OPERATION . . . . . WP 0036–1
Figure 1. Side RACC Support Bracket Unstow . . . . . WP 0036–1

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

Figure 2. Side RACC Support Bracket Stow . . . . . WP 0036–2

OPERATION UNDER USUAL CONDITIONS - RED CROSS FOLDING SIGN OPERATION . . WP 0037–1
Figure 1. Exterior Vehicle Rear Red Cross Folding Sign Open . . . . . WP 0037–1
Figure 2. Exterior Vehicle Rear Red Cross Folding Sign Close . . . . . WP 0037–2
Figure 3. Exterior Driver Side Rear Red Cross Folding Sign . . . . . WP 0037–2
Figure 4. Exterior Commander Side Rear Red Cross Folding Sign . . . . . WP 0037–3
Figure 5. Exterior Vehicle Roof Red Cross Folding Sign . . . . . WP 0037–3
Figure 6. Exterior Vehicle Front Red Cross Folding Sign Open . . . . . WP 0037–4
Figure 7. Exterior Vehicle Front Red Cross Folding Sign Close . . . . . WP 0037–4

OPERATION UNDER USUAL CONDITIONS - BLACKOUT (B.O.) OPERATION . . . . . WP 0038–1
Figure 1. B.O. Cover . . . . . WP 0038–1
Figure 2. LSS Control Panel . . . . . WP 0038–1
Figure 3. FSS Control Panel . . . . . WP 0038–2
Figure 4. MVLS . . . . . WP 0038–2

OPERATION UNDER USUAL CONDITIONS - LITTER LIFTING AND SECURING OPERATION WP 0039–1
Figure 1. Litter Lift Lock Pin . . . . . WP 0039–2
Figure 2. Attaching Lift Straps . . . . . WP 0039–2
Figure 3. Litter Lift Switch . . . . . WP 0039–3
Figure 4. Litter Lift Hookup . . . . . WP 0039–3
Figure 5. Litter Lift . . . . . WP 0039–4
Figure 6. Litter Platform . . . . . WP 0039–4
Figure 7. Litter Locking Bar and Buckling . . . . . WP 0039–5
Figure 8. Litter Buckling Strap and Wall Mount . . . . . WP 0039–5
Figure 9. Buckling Litter to Platform . . . . . WP 0039–6
Figure 10. Litter Trolley Home Position . . . . . WP 0039–6
Figure 11. Litter Belt and Locking Bar . . . . . WP 0039–7
Figure 12. Littler Buckling Strap and Wall Mount . . . . . WP 0039–7
Figure 13. Litter Lift Switch . . . . . WP 0039–8
Figure 14. Attaching Litter Lift Straps . . . . . WP 0039–8
Figure 15. Litter Trolley Home Position . . . . . WP 0039–9
Figure 16. Litter Trolleys over Magnetic Points . . . . . WP 0039–9
Figure 17. Litter Lift . . . . . WP 0039–10
Figure 18. Lifting Litter from Platform . . . . . WP 0039–10
Figure 19. Moving Litter to Litter Trolleys . . . . . WP 0039–11
Figure 20. Moving Litter Lift to Home Position . . . . . WP 0039–12

OPERATION UNDER USUAL CONDITIONS - LITTER TROLLEY AND RAILS OPERATION . WP 0040–1
Figure 1. Litter Trolley . . . . . WP 0040–1
Figure 2. Litter Trolleys and Rails . . . . . WP 0040–2
Figure 3. Litter to Trolley Loading . . . . . WP 0040–2
Figure 4. Litter Loading . . . . . WP 0040–3
Figure 5. Litter Handle . . . . . WP 0040–3
Figure 6. Litter and Trolleys in Loaded Position . . . . . WP 0040–4
Figure 7. Litter and Trolleys in Loaded Position . . . . . WP 0040–4
Figure 8. Litter Handles . . . . . WP 0040–5
Figure 9. Litter Loading . . . . . WP 0040–5
Figure 10. Litter-to-Trolley Loading . . . . . WP 0040–6
Figure 11. Litter Trolley Home Position . . . . . WP 0040–6

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

OPERATION UNDER USUAL CONDITIONS - SECURING MEDICAL EQUIPMENT . . . . . WP 0041–1
Figure 1. Medical Equipment Restraint . . . . . WP 0041–1
Figure 2. Medical Equipment Restraint . . . . . WP 0041–2
Figure 3. Oxygen Concentrator Restraints . . . . . WP 0041–3
Figure 4. Oxygen Concentrators . . . . . WP 0041–4
Figure 5. Oxygen Concentrator Restraints . . . . . WP 0041–5
Figure 6. Vital Sign Monitor (VSM) . . . . . WP 0041–6
Figure 7. VSM . . . . . WP 0041–7
Figure 8. Oxygen Bottles . . . . . WP 0041–8
Figure 9. Suction Apparatus Straps . . . . . WP 0041–9
Figure 10. Suction Apparatus . . . . . WP 0041–10
Figure 11. Suction Apparatus . . . . . WP 0041–11
Figure 12. Suction Apparatus Cable Routing . . . . . WP 0041–12
Figure 13. VSM Cable Routing . . . . . WP 0041–13
Figure 14. Oxygen Concentrator Cable Routing . . . . . WP 0041–14
Figure 15. Blood Warmer Cable Routing . . . . . WP 0041–15

OPERATION UNDER UNUSUAL CONDITIONS - SIDE DOORS OPERATION WITH ROCKET PROPELLED GRENADE (RPG) NETS . . . . . WP 0042–1
Figure 1. Side Door . . . . . WP 0042–2
Figure 2. Grab Handles, Steps, and Interior Door Handle . . . . . WP 0042–2

OPERATION UNDER UNUSUAL CONDITIONS - EXTREME HEAT AND/OR DUST . . . . . WP 0043–1

OPERATION UNDER UNUSUAL CONDITIONS - MUD, SAND, AND/OR SNOW. . . . . WP 0044–1

OPERATION UNDER UNUSUAL CONDITIONS - EXTREME COLD STARTING (BELOW 32°F [0°C]). . . . . WP 0045–1
Figure 1. IP . . . . . WP 0045–2
Figure 2. IP Cluster . . . . . WP 0045–2

OPERATION UNDER UNUSUAL CONDITIONS - OPERATING VEHICLE IN EXTREME COLD (BELOW 32°F [0°C]) . . . . . WP 0046–1
Figure 1. Oil PSI Gauge . . . . . WP 0046–4
Figure 2. MIR HEAT Switch . . . . . WP 0046–4

OPERATION UNDER UNUSUAL CONDITIONS - TIRE CHAIN INSTALLATION AND REMOVAL WP 0047–1
Figure 1. Snowchain Bumpstop Kit Identification . . . . . WP 0047–3
Figure 2. Tire Chain . . . . . WP 0047–4
Figure 3. Driver Rear Tire Chain Installation . . . . . WP 0047–4
Figure 4. Inboard Side of Tire . . . . . WP 0047–5
Figure 5. Outboard Side of Tire . . . . . WP 0047–5
Figure 6. Side Tire Chain Installation . . . . . WP 0047–6
Figure 7. Tire Chain Tension . . . . . WP 0047–6
Figure 8. Excess Tension Chain . . . . . WP 0047–7
Figure 9. Tire Chain Installation . . . . . WP 0047–8
Figure 10. Excess Tension Chain . . . . . WP 0047–9
Figure 11. Tire Chain Tension . . . . . WP 0047–9
Figure 12. Side Tire Chain Removal . . . . . WP 0047–10
Figure 13. Outboard Side of Tire . . . . . WP 0047–10
Figure 14. Inboard Side of Tire . . . . . WP 0047–11
Figure 15. Commander Rear Tire Chain Removal . . . . . WP 0047–12

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

OPERATION UNDER UNUSUAL CONDITIONS - THROTTLE IDLE CONTROL . . . . . WP 0048–1
Figure 1. Throttle Idle Control Switches . . . . . WP 0048–2

OPERATION UNDER UNUSUAL CONDITIONS - NIGHT VISION OPERATION . . . . . WP 0049–1
Figure 1. Spotlight IR Operation . . . . . WP 0049–1
Figure 2. Spotlight Rotation . . . . . WP 0049–2
Figure 3. B.O. MARKER, B.O. DRIVE, and IR Control Operation . . . . . WP 0049–2

OPERATION UNDER UNUSUAL CONDITIONS - FORDING . . . . . WP 0050–1

OPERATION UNDER UNUSUAL CONDITIONS - STEEP GRADES (ASCENDING) . . . . . WP 0051–1
Figure 1. Ascent Controls . . . . . WP 0051–3

OPERATION UNDER UNUSUAL CONDITIONS - STEEP GRADES (DESCENDING) . . . . . WP 0052–1
Figure 1. Descent Controls . . . . . WP 0052–3
Figure 2. Service Brake . . . . . WP 0052–4

OPERATION UNDER UNUSUAL CONDITIONS - DRIVER TOWING OPERATION . . . . . WP 0053–1

OPERATION UNDER UNUSUAL CONDITIONS - WINCH OPERATION . . . . . WP 0054–1
Figure 1. OLI Device . . . . . WP 0054–3
Figure 2. Winch Assembly . . . . . WP 0054–4
Figure 3. Winch Cable Hook Removal . . . . . WP 0054–4
Figure 4. Winch Cable . . . . . WP 0054–5
Figure 5. Winch Remote Control . . . . . WP 0054–6
Figure 6. Winch Cable Hook Stowage . . . . . WP 0054–8
Figure 7. Winch Remote Control . . . . . WP 0054–9

OPERATION UNDER UNUSUAL CONDITIONS - MANUAL REAR DOOR/RAMP OPERATION WP 0055–1
Figure 1. Pump Handle Storage . . . . . WP 0055–1
Figure 2. Top Plunger and Handle . . . . . WP 0055–2

EMERGENCY OPERATION - SIDE DOORS EGRESS . . . . . WP 0056–1
Figure 1. Combat Lock Shaft and UCLT (MAXXPRO MEAP Adapter End) . . . . . WP 0056–2
Figure 2. Combat Lock Shaft and UCLT (MATV/DASH Adapter End) . . . . . WP 0056–3
Figure 3. Combat Lock Shaft and UCLT (MAXXPRO Adapter End) . . . . . WP 0056–4
Figure 4. Combat Lock Shaft and Screwdriver . . . . . WP 0056–5

EMERGENCY OPERATION - SIDE DOORS EGRESS WITH ROCKET PROPELLED GRENADE (RPG) NETS . . . . . WP 0057–1
Figure 1. Combat Lock Shaft and UCLT (MAXXPRO MEAP Adapter End) . . . . . WP 0057–2
Figure 2. Combat Lock Shaft and UCLT (MATV/DASH Adapter End) . . . . . WP 0057–3
Figure 3. Combat Lock Shaft and UCLT (MAXXPRO Adapter End) . . . . . WP 0057–4
Figure 4. Combat Lock Shaft and Screwdriver . . . . . WP 0057–5

EMERGENCY OPERATION - SEAT BELT EGRESS . . . . . WP 0058–1
Figure 1. Seat Belt Cutter . . . . . WP 0058–2

EMERGENCY OPERATION - BLAST ENERGY ATTENUATING TURRET SEAT (BEATS) EGRESS . . . . . WP 0059–1
Figure 1. BEATS Emergency Release . . . . . WP 0059–1

EMERGENCY OPERATION - IMPROVED GUNNER RESTRAINT SYSTEM (IGRS) EGRESS . WP 0060–1
Figure 1. IGRS Emergency Release . . . . . WP 0060–2
Figure 2. IGRS Rotary Buckle and Straps . . . . . WP 0060–2

EMERGENCY OPERATION - REAR DOOR/RAMP EMERGENCY RELEASE . . . . . WP 0061–1
Figure 1. Releasing Hydraulic Pressure . . . . . WP 0061–2
Figure 2. Bridge Pin, Lock Pin, and Pump Handle . . . . . WP 0061–2

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
Figure 3. Rear Door/Ramp Locker Shaft and Pump Handle	WP 0061–3
EMERGENCY OPERATION - EMERGENCY HATCH (ROOF)	WP 0062–1
Figure 1. Emergency Hatch Handle Latch Lever (Shown from Inside Vehicle)	WP 0062–2
Figure 2. Emergency Hatch	WP 0062–2
Figure 3. Emergency Hatch Release Lever	WP 0062–3
EMERGENCY OPERATION - FLAT TIRE	WP 0063–1
Figure 1. Central Tire Inflation System (CTIS) Tire with Run Flat	WP 0063–1
EMERGENCY OPERATION - PORTABLE FIRE EXTINGUISHER	WP 0064–1
Figure 1. Portable Fire Extinguisher and Bracket	WP 0064–2
EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS)	WP 0065–1
Figure 1. AFES Control Switches	WP 0065–2
Figure 2. Front Passenger Area AFES Nozzle	WP 0065–2
Figure 3. Rear Passenger Area AFES Nozzle	WP 0065–3
Figure 4. AFES Control Switches	WP 0065–4
Figure 5. Engine AFES Nozzles at Bulkhead	WP 0065–4
Figure 6. Engine AFES Nozzles at Alternator	WP 0065–5
Figure 7. FSS/AFES Control Switches	WP 0065–6
Figure 8. Tire FSS Nozzles	WP 0065–6
Figure 9. Fuel Tank FSS Nozzles	WP 0065–7
EMERGENCY OPERATION - VEHICLE EMERGENCY EGRESS (VEE) WINDOW OPERATION	WP 0066–1
Figure 1. Vehicle Emergency Egress (VEE) Window	WP 0066–2
EMERGENCY OPERATION - SLAVE STARTING VEHICLE	WP 0067–1
Figure 1. Storage Box Doors Open	WP 0067–2
Figure 2. 110V Power Inverter	WP 0067–3
Figure 3. Slave Receptacle Cap Removal	WP 0067–3
Figure 4. Slave Receptacle and Cable	WP 0067–4
Figure 5. Slave Receptacle Cap Installation	WP 0067–4
Figure 6. Stowage Box Doors Closed	WP 0067–5
EMERGENCY OPERATION - TRANSMISSION PROCEDURES (LIMP MODE)	WP 0068–1
Figure 1. TRANS Temperature Gauge, WATER Temperature Gauge, and CHECK TRANS Light	WP 0068–2
EMERGENCY OPERATION - OPERATING VEHICLE DURING ENGINE OVERHEATING	WP 0069–1
Figure 1. WATER Temperature Gauge and RED Check ENGINE Light	WP 0069–2
EMERGENCY OPERATION - OPERATING VEHICLE DURING LOSS OF OIL PRESSURE	WP 0070–1
Figure 1. OIL PSI Gauge, OIL PSI Gauge RED Indicator Light, and RED ENGINE Light	WP 0070–1
EMERGENCY OPERATION - OPERATING VEHICLE DURING LOSS OF AIR SYSTEM PRESSURE	WP 0071–1
Figure 1. AIR Pressure Gauge #1 and AIR Pressure Gauge #2	WP 0071–2
EMERGENCY OPERATION - ENGINE OUT OF FUEL (RESTART PROCEDURES)	WP 0072–1
Figure 1. Fuel Bleed Valve and Pump	WP 0072–2
STOWAGE AND DECAL/DATA PLATE GUIDE	WP 0073–1
Figure 1. Front Vehicle Stowage	WP 0073–1
Figure 2. Driver Side Stowage	WP 0073–2
Figure 3. Commander Side Stowage	WP 0073–2
Figure 4. Rear Door/Ramp Stowage Box	WP 0073–3

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
Figure 5. Rear Door/Ramp Internal Storage Bags	WP 0073–4
Figure 6. Commander Side Passenger Storage Bags and Medic Supply Storage Boxes	WP 0073–4
Figure 7. Driver Side Passenger Storage Bags and Medic Supply Storage Boxes	WP 0073–5
Figure 8. Driver Side Door Storage Bags	WP 0073–5
Figure 9. Commander Side Door Storage Bags	WP 0073–6
Figure 10. Front Cab Ceiling Storage Bags	WP 0073–6
Figure 11. OGPK Stowage Bags and Ammunition Storage	WP 0073–7
Figure 12. Front Bumper Markings	WP 0073–7
Figure 13. Driver Side Markings	WP 0073–8
Figure 14. Driver Side Hood Opened Markings	WP 0073–8
Figure 15. Commander Side Markings	WP 0073–9
Figure 16. Commander Side Hood Opened Markings	WP 0073–9
Figure 17. Rear Door/Ramp Markings	WP 0073–10
Figure 18. Passenger Compartment Markings	WP 0073–10
Figure 19. OGPK Markings and Decals	WP 0073–10
Figure 20. Front Bumper Winch Decal	WP 0073–11
Figure 21. Commander Side Hood Decal	WP 0073–12
Figure 22. Commander Side Fan Belt and Antifreeze Decal	WP 0073–12
Figure 23. Driver Side Fan Belt and Engine Oil Decal	WP 0073–13
Figure 24. Underhood Fuse/Relay Center Decal	WP 0073–13
Figure 25. Underhood Fan Decals	WP 0073–14
Figure 26. Driver Side Door Decals	WP 0073–15
Figure 27. Commander Side Door Decals	WP 0073–16
Figure 28. Vehicle Identification Number Plate and Driver-Controlled Full Locking Differential (DCDL) Interior Decal	WP 0073–16
Figure 29. Driver and Commander Seat Blast Decal	WP 0073–17
Figure 30. Driver Side Forward Interior Decal	WP 0073–17
Figure 31. Vehicle Emergency Egress (VEE) Window Decals	WP 0073–18
Figure 32. Instrument Panel (IP) Decal	WP 0073–18
Figure 33. IP Fuse/Relay Decal	WP 0073–19
Figure 34. Improved Turret Drive System (ITDS) Controller Decal	WP 0073–19
Figure 35. OGPK Transparent Armor Decal	WP 0073–20
Figure 36. Driver Side Floor Decals	WP 0073–20
Figure 37. Driver Side Wall Mounted Decal	WP 0073–21
Figure 38. Driver Side Passenger Compartment Decal	WP 0073–21
Figure 39. Oxygen Bottle Bracket Decal	WP 0073–22
Figure 40. Ramp Switch Decal	WP 0073–22
Figure 41. Driver Side Litter Trolley Decal	WP 0073–22
Figure 42. Side Passenger Floor Litter Trolley Decals	WP 0073–23
Figure 43. Side Passenger Compartment Decals	WP 0073–23
Figure 44. Side Passenger Trolley Rails Decal	WP 0073–23
Figure 45. Seat/Rear Ramp Decal	WP 0073–24
Figure 46. Rear Ramp Trolley Decal	WP 0073–24
Figure 47. Emergency Hatch Decal	WP 0073–25
Figure 48. Rear Door/Ramp Decals	WP 0073–25
Figure 49. Driver Side Rear Door/Ramp Decal	WP 0073–26
Figure 50. Rear Door/Ramp and Stowage Box Decals	WP 0073–26

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
ON-VEHICLE EQUIPMENT LOAD PLAN	WP 0074–1
Figure 1. External Front Vehicle Stowage	WP 0074–1
Figure 2. Front Bumper Mount	WP 0074–2
Figure 3. Front and Rear Tow Hooks	WP 0074–2
Figure 4. Marker Panel and Military Cans Stowage	WP 0074–3
Figure 5. Commander Side Folding Rigid Litters and Spineboard Without RPG Nets	WP 0074–3
Figure 6. Commander Side Folding Rigid Litters and Spineboard With RPG Nets	WP 0074–4
Figure 7. Commander Side Forward Stowage Box	WP 0074–4
Figure 8. Commander Side Center Forward Stowage Box	WP 0074–5
Figure 9. Commander Side Middle Stowage Box	WP 0074–5
Figure 10. Tool Bag (Located in Commander Side Center Rear Stowage Box)	WP 0074–6
Figure 11. Commander Side Rear Stowage Box	WP 0074–7
Figure 12. Commander Rear Door/Ramp Stowage Boxes	WP 0074–8
Figure 13. Driver Side Folding Rigid Litters and Spineboard Without RPG Nets	WP 0074–8
Figure 14. Driver Side Folding Rigid Litters and Spineboard With RPG Nets	WP 0074–9
Figure 15. Driver Side Forward Stowage Box	WP 0074–10
Figure 16. Driver Side Center Forward Stowage Box	WP 0074–11
Figure 17. Driver Side Center Rear Stowage Box	WP 0074–11
Figure 18. Driver Side Rear Stowage Box	WP 0074–12
Figure 19. Driver, Commander, and Passenger Seats	WP 0074–12
Figure 20. Driver Side Front Cab Ceiling Storage Bag	WP 0074–13
Figure 21. Commander Side Forward Wall	WP 0074–13
Figure 22. Commander Side Passenger Stowage	WP 0074–14
Figure 23. Driver Side Passenger Floor Boxes	WP 0074–14
Figure 24. Driver Side Passenger Wall Mounted (Overall)	WP 0074–15
Figure 25. Front Passenger Compartment Ceiling	WP 0074–16
Figure 26. Driver Side Passenger Compartment Rear Wall	WP 0074–16
Table 1. External Front Vehicle Stowage	WP 0074–1
Table 2. Front Bumper Mount	WP 0074–2
Table 3. Front and Rear Tow Hooks	WP 0074–2
Table 4. Marker Panel and Military Cans Stowage	WP 0074–3
Table 5. Commander Side Folding Rigid Litters and Spineboard Without RPG Nets	WP 0074–3
Table 6. Commander Side Folding Rigid Litters and Spineboard With RPG Nets	WP 0074–4
Table 7. Commander Side Forward Stowage Box	WP 0074–4
Table 8. Commander Side Center Forward Stowage Box	WP 0074–5
Table 9. Commander Side Middle Stowage Box	WP 0074–5
Table 10. Tool Bag (Located in Commander Side Center Rear Stowage Box)	WP 0074–6
Table 11. Commander Side Rear Stowage Box	WP 0074–7
Table 12. Commander Rear Door/Ramp Stowage Boxes	WP 0074–8
Table 13. Driver Side Folding Rigid Litters and Spineboard Without RPG Nets	WP 0074–8
Table 14. Driver Side Folding Rigid Litters and Spineboard With RPG Nets	WP 0074–9
Table 15. Driver Side Forward Stowage Box	WP 0074–10
Table 16. Driver Side Center Forward Stowage Box	WP 0074–11
Table 17. Driver Side Center Rear Stowage Box	WP 0074–11
Table 18. Driver Side Rear Stowage Box	WP 0074–12
Table 19. Driver, Commander, and Passenger Seats	WP 0074–12
Table 20. Driver Side Front Cab Ceiling Storage Bag	WP 0074–13

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

Table 21. Commander Side Forward Wall . . . WP 0074–13
Table 22. Commander Side Passenger Stowage . . . WP 0074–14
Table 23. Driver Side Passenger Floor Boxes . . . WP 0074–15
Table 24. Driver Side Passenger Wall Mounted (Overall) . . . WP 0074–15
Table 25. Front Passenger Compartment Ceiling . . . WP 0074–16
Table 26. Driver Side Passenger Compartment Rear Wall . . . WP 0074–16

CHAPTER 3.TROUBLESHOOTING PROCEDURES
TROUBLESHOOTING INTRODUCTION . . . WP 0075–1
TROUBLESHOOTING INDEX . . . WP 0076–1
ENGINE SYSTEM TROUBLESHOOTING PROCEDURES . . . WP 0077–1
ELECTRICAL SYSTEM TROUBLESHOOTING PROCEDURES . . . WP 0078–1
TRANSMISSION TROUBLESHOOTING PROCEDURES . . . WP 0079–1
FUEL FIRED HEATER TROUBLESHOOTING PROCEDURES . . . WP 0080–1
Figure 1. Heater Control - Unlocking . . . WP 0080–1
Figure 2. Heater Control - Unlocking . . . WP 0080–2
STEERING AND SUSPENSION TROUBLESHOOTING PROCEDURES . . . WP 0081–1
AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) AND FIRE SUPPRESSION SYSTEM (FSS) TROUBLESHOOTING PROCEDURES . . . WP 0082–1
WINCH TROUBLESHOOTING PROCEDURES . . . WP 0083–1
Figure 1. OLI Device . . . WP 0083–4
AIR PRESSURE SYSTEM TROUBLESHOOTING PROCEDURES . . . WP 0084–1
Figure 1. OVERSPEED Warning Indicator . . . WP 0084–4
Figure 2. CTIS DDM Check Tire Signals . . . WP 0084–5
Figure 3. CTIS DDM Check Tire Signals . . . WP 0084–6
OBJECTIVE GUNNERS PROTECTION KIT (OGPK) TROUBLESHOOTING PROCEDURES . . . WP 0085–1
AMBULANCE EQUIPMENT TROUBLESHOOTING PROCEDURES . . . WP 0086–1
Figure 1. Litter Lift Power Cable Connectors . . . WP 0086–2
Figure 2. 110V Outlet and GCFI . . . WP 0086–3

CHAPTER 4. MAINTENANCE INSTRUCTIONS
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION . . . WP 0087–1
Table 1. Visual Detection of Corrosion . . . WP 0087–2
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) . . . WP 0088–1
Figure 1. Door Steps . . . WP 0088–4
Figure 2. Exterior Transparent Armor . . . WP 0088–5
Figure 3. Side Riot Guards . . . WP 0088–5
Figure 4. Rear Riot Guards . . . WP 0088–6
Figure 5. Hand Rail and Stowage Bag . . . WP 0088–6
Figure 6. Exterior Battery Box Armor Door . . . WP 0088–7
Figure 7. Side Door . . . WP 0088–8
Figure 8. Rugged All-Purpose Cargo Carrier (RACC) . . . WP 0088–8
Figure 9. Front RACC . . . WP 0088–9
Figure 10. Rear Steps . . . WP 0088–9
Figure 11. Driver Side External Stowage Box . . . WP 0088–10
Figure 12. Rear External Stowage Box . . . WP 0088–11
Figure 13. Portable Fire Extinguisher . . . WP 0088–12

TABLE OF CONTENTS – (Continued)

		Page No. WP Sequence No.
Figure 14.	Exterior Driver Side FSS Extinguishers	WP 0088–13
Figure 15.	Exterior Commander Side FSS Extinguisher	WP 0088–13
Figure 16.	Exterior AFES Extinguisher	WP 0088–14
Figure 17.	Exterior AFES Extinguisher	WP 0088–14
Figure 18.	Fuel Tank Cap and Strainer	WP 0088–16
Figure 19.	Tires	WP 0088–17
Figure 20.	Wheel Hub Seal	WP 0088–17
Figure 21.	Steering Components	WP 0088–18
Figure 22.	Tie Rods and Steering Knuckles	WP 0088–19
Figure 23.	Shock Absorber, Coil Spring, and Bump Stop	WP 0088–20
Figure 24.	Control Arms, Sway Bar, and End Links	WP 0088–21
Figure 25.	Driver Side Front Rotors	WP 0088–22
Figure 26.	Driver Side Rear Brakes	WP 0088–22
Figure 27.	Brake Pad Groove	WP 0088–23
Figure 28.	Radiator Overflow Reservoir	WP 0088–25
Figure 29.	Engine Oil Dipstick	WP 0088–27
Figure 30.	Engine Oil Dipstick Operating Range	WP 0088–28
Figure 31.	Power Steering Fluid Reservoir	WP 0088–29
Figure 32.	Fan Shroud	WP 0088–31
Figure 33.	Serpentine Belts	WP 0088–32
Figure 34.	Windshield Washer Fluid Reservoir	WP 0088–33
Figure 35.	Blackout Curtain	WP 0088–34
Figure 36.	Seat Adjustment Lever	WP 0088–35
Figure 37.	Headrest Adjustment Lever	WP 0088–35
Figure 38.	Medic Seat Adjustment	WP 0088–36
Figure 39.	Gunner Platform	WP 0088–37
Figure 40.	Rear Passenger Seat Lever	WP 0088–37
Figure 41.	Seat Back in Down Position	WP 0088–38
Figure 42.	Seat Belts	WP 0088–39
Figure 43.	Passenger Compartment AFES Extinguishers	WP 0088–40
Figure 44.	Driver Compartment AFES Extinguisher	WP 0088–40
Figure 45.	Hydraulic Pump Cover Stowage Compartment	WP 0088–41
Figure 46.	Rear Door/Ramp Internal Stowage Compartment	WP 0088–42
Figure 47.	Driver Side Cabin Storage Bags	WP 0088–44
Figure 48.	Commander Side Cabin Storage Bags	WP 0088–44
Figure 49.	Turret Storage Bags	WP 0088–44
Figure 50.	Emergency Hatch (Roof)	WP 0088–44
Figure 51.	IGRS Buckle and Latches	WP 0088–45
Figure 52.	IGRS Back Pad and Webbing	WP 0088–45
Figure 53.	IGRS D-ring	WP 0088–46
Figure 54.	IGRS Buckle	WP 0088–46
Figure 55.	IGRS Anchor Strap Pelican Clip	WP 0088–47
Figure 56.	IGRS Strap and Floor Retractor	WP 0088–47
Figure 57.	BEATS	WP 0088–48
Figure 58.	Gunner Hatch and Turret Ring	WP 0088–49
Figure 59.	Inclinometer	WP 0088–51
Figure 60.	Horns	WP 0088–52

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
Figure 61. FSS Control Panel	WP 0088–53
Figure 62. AFES Control Panel	WP 0088–54
Figure 63. AFES BBU	WP 0088–56
Figure 64. Cabin AFES Sensors	WP 0088–57
Figure 65. Engine AFES Sensors	WP 0088–57
Figure 66. Rear Door/Ramp Hinges	WP 0088–58
Figure 67. Rear Door/Ramp	WP 0088–59
Figure 68. Rear Door/Ramp	WP 0088–59
Figure 69. Remote Inverter Switch	WP 0088–60
Figure 70. Litter Lift Switch	WP 0088–60
Figure 71. Litter Lift	WP 0088–61
Figure 72. Trolley Slides and Rails	WP 0088–62
Figure 73. Driver and Commander Heater and Air Conditioning Air Flow Bag	WP 0088–62
Figure 74. Passenger Heater and Air Conditioning Air Flow Bag	WP 0088–62
Figure 75. Rear Fuel/Water Can and Stowage Rack Inspection	WP 0088–63
Figure 76. Transmission Fluid Dipstick	WP 0088–65
Figure 77. Transmission Fluid Dipstick Cold Check Operating Range	WP 0088–66
Figure 78. Windshield Wipers	WP 0088–69
Figure 79. CTIS	WP 0088–70
Figure 80. IP Cluster Gauges	WP 0088–71
Figure 81. VOLTS, 24V System Gauge	WP 0088–72
Figure 82. AIR FILTER RESTRICTION Gauge	WP 0088–72
Figure 83. FSS Control Panel	WP 0088–74
Figure 84. AFES Control Panel	WP 0088–75
Figure 85. AFES BBU	WP 0088–76
Figure 86. Cabin AFES Sensor	WP 0088–77
Figure 87. Engine AFES Sensor (Driver Side Shown; Commander Side Similar)	WP 0088–78
Figure 88. Trolley Slides and Rails	WP 0088–79
Figure 89. Rear Door/Ramp Hinges	WP 0088–80
Figure 90. Rear Door/Ramp	WP 0088–80
Figure 91. Rear Door/Ramp	WP 0088–81
Figure 92. Inclinometer	WP 0088–82
Figure 93. Seat Adjustment Lever	WP 0088–83
Figure 94. Headrest Adjustment Lever	WP 0088–84
Figure 95. Medic Seat Adjustment	WP 0088–84
Figure 96. Gunner Platform	WP 0088–85
Figure 97. Rear Passenger Seat Lever	WP 0088–86
Figure 98. Seat Back in Down Position	WP 0088–86
Figure 99. Seat Belts	WP 0088–87
Figure 100. Passenger Compartment AFES Extinguishers	WP 0088–89
Figure 101. Driver Compartment AFES Extinguisher	WP 0088–89
Figure 102. Passenger Stowage Compartment	WP 0088–89
Figure 103. Rear Door/Ramp Internal Stowage Compartment	WP 0088–90
Figure 104. Driver Side Cabin Storage Bags	WP 0088–91
Figure 105. Commander Side Cabin Storage Bags	WP 0088–91
Figure 106. Turret Storage Bags	WP 0088–91
Figure 107. Emergency Hatch	WP 0088–92

TABLE OF CONTENTS – (Continued)

		Page No. WP Sequence No.
Figure 108.	BEATS	WP 0088–93
Figure 109.	IGRS Buckle and Latches	WP 0088–93
Figure 110.	IGRS Back Pad and Webbing	WP 0088–94
Figure 111.	IGRS D-ring	WP 0088–94
Figure 112.	IGRS Buckle	WP 0088–95
Figure 113.	IGRS Anchor Strap Pelican Clip	WP 0088–95
Figure 114.	IGRS Strap and Floor Retractor	WP 0088–96
Figure 115.	Gunner Hatch and Turret Ring	WP 0088–97
Figure 116.	Exterior Transparent Armor	WP 0088–99
Figure 117.	Side Riot Guards	WP 0088–99
Figure 118.	Rear Riot Guards	WP 0088–100
Figure 119.	Hand Rail and Stowage Bag	WP 0088–100
Figure 120.	Side Door	WP 0088–101
Figure 121.	Portable Fire Extinguisher	WP 0088–102
Figure 122.	Exterior Driver Side FSS Extinguishers	WP 0088–103
Figure 123.	Exterior Commander Side FSS Extinguisher	WP 0088–103
Figure 124.	Exterior AFES Extinguisher	WP 0088–104
Figure 125.	Exterior AFES Extinguisher	WP 0088–104
Figure 126.	Fuel Tank Cap and Strainer	WP 0088–106
Figure 127.	Tires	WP 0088–107
Figure 128.	Wheel Hub Oil Seal	WP 0088–107
Figure 129.	Steering Gears	WP 0088–108
Figure 130.	Tie Rods and Steering Knuckles	WP 0088–109
Figure 131.	Radiator Overflow Reservoir	WP 0088–111
Figure 132.	Transmission Fluid Dipstick	WP 0088–114
Figure 133.	Transmission Fluid Dipstick Hot Range	WP 0088–114
Figure 134.	Engine Oil Dipstick	WP 0088–116
Figure 135.	Engine Oil Dipstick Operating Range	WP 0088–117
Figure 136.	Power Steering Fluid Reservoir	WP 0088–118
Figure 137.	Fuel/Water Separator	WP 0088–119
Figure 138.	Fan Shroud	WP 0088–122
Figure 139.	Serpentine Belts	WP 0088–123
Figure 140.	Windshield Washer Fluid Reservoir	WP 0088–124
Figure 141.	RACC	WP 0088–125
Figure 142.	Front RACC	WP 0088–125
Figure 143.	Driver Side External Stowage Box	WP 0088–126
Figure 144.	Rear External Stowage Box	WP 0088–126
Figure 145.	Exterior Battery Box Armor Door	WP 0088–127
Figure 146.	Fuel Tank Cap and Strainer	WP 0088–129
Figure 147.	Front Hood and Latches	WP 0088–130
Figure 148.	Fuel/Water Separator	WP 0088–131
Figure 149.	Pintle Hook	WP 0088–131
Figure 150.	Gladhands	WP 0088–132
Figure 151.	Driver Side Front Brakes	WP 0088–134
Figure 152.	Driver Side Rear Brakes	WP 0088–134
Figure 153.	Batteries	WP 0088–136
Figure 154.	Shock Absorber, Coil Spring, and Bump Stop	WP 0088–137

TABLE OF CONTENTS – (Continued)

	Page No. WP Sequence No.
Figure 155. Control Arms, Sway Bar and End Links	WP 0088–137
Figure 156. Brake Pad Groove	WP 0088–138
Figure 157. 110V Outlet and Inverter	WP 0088–139
Figure 158. NATO Slave Plug Start Connector	WP 0088–140
Figure 159. ITDS	WP 0088–141
Figure 160. OGPK Turret	WP 0088–141
Figure 161. Tires	WP 0088–141
Figure 162. Wheel Hub Seal	WP 0088–142
Figure 163. Rear Propeller Shaft	WP 0088–142
Figure 164. Driver Side Front Axle Breather	WP 0088–143
Figure 165. Commander Side Rear Axle Breather	WP 0088–143
Figure 166. Fuel Fired Heater Controls	WP 0088–144
Figure 167. Winch Cable and Control Connector	WP 0088–146
Table 1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)	WP 0088–2
VEHICLE CLEANING	WP 0089–1
Table 1. Equipment and Acceptable Cleaning Materials	WP 0089–6
ENGINE OIL SERVICE	WP 0090–1
Figure 1. Engine Oil Dipstick Handle and Fill Tube	WP 0090–2
Figure 2. Fill Tube and Engine Oil Dipstick	WP 0090–3
Figure 3. Engine Oil Dipstick	WP 0090–3
AIR CLEANER ASSEMBLY SERVICE	WP 0091–1
Figure 1. Air Cleaner Assembly	WP 0091–2
Figure 2. Air Cleaner Assembly Side View	WP 0091–2
Figure 3. Air Cleaner Assembly Side View	WP 0091–3
Figure 4. Air Filter Element	WP 0091–3
Figure 5. Tire Gage Inflator and Air Filter Element	WP 0091–4
Figure 6. Air Filter Elements	WP 0091–5
Figure 7. Air Cleaner Assembly Side View	WP 0091–5
Figure 8. Air Cleaner Assembly	WP 0091–6
Figure 9. AIR FILTER RESTRICTION Gauge	WP 0091–6
FUEL/WATER SEPARATOR DRAINING	WP 0092–1
Figure 1. Fuel/Water Separator Drain Hose	WP 0092–3
Figure 2. Fuel/Water Separator	WP 0092–4
COOLANT SERVICE	WP 0093–1
Figure 1. Radiator Overflow Tank	WP 0093–2
DEAERATION TANK PRESSURE CAP REMOVAL AND INSTALLATION	WP 0094–1
Figure 1. Deaeration Tank Pressure Cap	WP 0094–2
CIRCUIT BREAKER RESET	WP 0095–1
Figure 1. Circuit Breaker Reset	WP 0095–1
Figure 2. Circuit Breaker Panel Legend	WP 0095–2
Figure 3. 24V Power Distribution Module Breaker Reset	WP 0095–3
Figure 4. Power Distribution Module Legend	WP 0095–3
TRANSMISSION FLUID SERVICE	WP 0096–1
Figure 1. Transmission Fluid Dipstick	WP 0096–3
Figure 2. Transmission Fluid Dipstick Cold Range	WP 0096–4
Figure 3. Transmission Fluid Fill Tube	WP 0096–4

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

Figure 4. Transmission Fluid Dipstick Cold Bands . . . . . WP 0096–5
Figure 5. Transmission Fluid Dipstick. . . . . WP 0096–5
Figure 6. Transmission Fluid Dipstick. . . . . WP 0096–6
Figure 7. Transmission Fluid Dipstick Hot Range . . . . . WP 0096–7
Figure 8. Transmission Fluid Fill Tube . . . . . WP 0096–7
Figure 9. Transmission Fluid Dipstick Hot Bands. . . . . WP 0096–8
Figure 10. Transmission Fluid Dipstick . . . . . WP 0096–8

TIRE INFLATION PROCEDURE . . . . . WP 0097–1
Figure 1. Rear EMERGENCY Gladhand . . . . . WP 0097–1
Figure 2. Air Hose Gladhand Connection . . . . . WP 0097–2
Figure 3. Valve Stem Cap. . . . . WP 0097–3
Figure 4. Air Hose Gladhand Disconnect . . . . . WP 0097–3
Figure 5. Rear EMERGENCY Gladhand . . . . . WP 0097–4

EXTERIOR BATTERY BOX ARMOR DOOR OPEN AND CLOSE . . . . . WP 0098–1
Figure 1. Exterior Battery Box Armor Door . . . . . WP 0098–2

CAGING AND UNCAGING BRAKES . . . . . WP 0099–1
Figure 1. Brake Caging Bolt. . . . . WP 0099–2

POWER STEERING FLUID SERVICE . . . . . WP 0100–1
Figure 1. Power Steering Fluid Reservoir . . . . . WP 0100–2

WINDSHIELD WASHER SERVICE. . . . . WP 0101–1
Figure 1. Windshield Washer Fluid Reservoir . . . . . WP 0101–2

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) BATTERY BACKUP UNIT (BBU) DISABLE AND ENABLE . . . . . WP 0102–1
Figure 1. AFES BBU Connected. . . . . WP 0102–2
Figure 2. Plastic Bag and Cable Lock Strap . . . . . WP 0102–2
Figure 3. Masking Tape on AFES BBU Connector . . . . . WP 0102–3
Figure 4. AFES Control Panel with Wire Tag Attached . . . . . WP 0102–3
Figure 5. AFES Control Panel with Wire Tag Removal . . . . . WP 0102–4
Figure 6. Plastic Bag Removal . . . . . WP 0102–4
Figure 7. Masking Tape Removal . . . . . WP 0102–5
Figure 8. AFES BBU Connector Harness . . . . . WP 0102–5
Figure 9. AFES Control Panel . . . . . WP 0102–6
Figure 10. BBU LED Indicator . . . . . WP 0102–7

VEHICLE TOWING . . . . . WP 0103–1
Figure 1. Towing Preparation Controls . . . . . WP 0103–3
Figure 2. Tow Bar and Tow Bar Adapter Connection - Disabled Vehicle . . . . . WP 0103–4
Figure 3. Pintle Tow Bar Connection - Towing Vehicle . . . . . WP 0103–5
Figure 4. Electrical Cable and Gladhand Air Lines – Disabled Vehicle . . . . . WP 0103–6
Figure 5. Electrical Cable and Gladhand Air Lines - Towing Vehicle . . . . . WP 0103–6
Figure 6. Electrical Cable and Gladhand Air Line Disconnect – Disabled Vehicle . . . . WP 0103–8
Figure 7. Electrical Cable and Gladhand Air Lines Disconnect - Towing Vehicle . . . . WP 0103–8
Figure 8. Pintle Tow Bar Disconnect - Towing Vehicle. . . . . WP 0103–9
Figure 9. Tow Bar and Tow Bar Adapter - Disabled Vehicle . . . . . WP 0103–10

VEHICLE PARKING . . . . . WP 0104–1

VEHICLE HOISTING POINTS . . . . . WP 0105–1
Figure 1. Lift Eyes . . . . . WP 0105–1

TABLE OF CONTENTS – (Continued)

Page No.
WP Sequence No.

LUBRICATION INSTRUCTIONS . . . . . WP 0106–1
Figure 1. Body Lubrication Services Overview (Driver Side) . . . . . WP 0106–2
Figure 2. Body Lubrication Services Overview (Commander Side) . . . . . WP 0106–3
Figure 3. Chassis Lubrication Services Overview . . . . . WP 0106–4
Figure 4. Windshield Washer Fluid . . . . . WP 0106–5
Figure 5. Radiator Overflow Reservoir . . . . . WP 0106–5
Figure 6. Engine Crankcase, Power Steering Fluid, and Transmission . . . . . WP 0106–5
Figure 7. Deflector Pintle and ITDS . . . . . WP 0106–6
Figure 8. Rear Door Cylinder Upper Pivot . . . . . WP 0106–6
Figure 9. Rear Door Cylinder Lower Pivot . . . . . WP 0106–6
Figure 10. Commander Side Rear Door Lock, Hydraulic Cylinder, and Pin (Cover Removed; Drive Side Similar) . . . . . WP 0106–7
Figure 11. Pintle Hook . . . . . WP 0106–7
Figure 12. Stowage Box Door Hinges (Commander Side Similar) . . . . . WP 0106–7
Figure 13. Armor Access Door, Armor Access Door Hinges, and Holddowns (Driver Side) WP 0106–8
Figure 14. Armor Access Door, Armor Access Door Hinges, and Holddowns (Commander Side) . . . . . WP 0106–8
Figure 15. Driver Door Latch (Commander Door Similar) . . . . . WP 0106–9
Figure 16. Driver Door Hinge (Commander Door Similar) . . . . . WP 0106–9
Figure 17. Drag Link . . . . . WP 0106–10
Figure 18. Steering Gear/Shaft U-Joints/Slip Joints . . . . . WP 0106–10
Figure 19. Hood Hinges . . . . . WP 0106–10
Figure 20. Winch Cable . . . . . WP 0106–11
Figure 21. Driver Side End Link (Commander Side Similar) . . . . . WP 0106–11
Figure 22. Rear Propeller Shaft . . . . . WP 0106–11
Figure 23. Rear Half Shafts . . . . . WP 0106–12
Figure 24. Front Half Shafts . . . . . WP 0106–12
Figure 25. Driver Side Front Brake Caliper (Commander Side and Rear Brake Calipers Similar) . . . . . WP 0106–12
Table 1. Lubrication Schedule . . . . . WP 0106–13

CHAPTER 5.SUPPORTING INFORMATION

REFERENCES . . . . . WP 0107–1
COMPONENTS OF END ITEMS (COEI)/BASIC ISSUE ITEMS (BII) LISTS . . . . . WP 0108–1
ADDITIONAL AUTHORIZATION LIST (AAL). . . . . WP 0109–1
Table 1. Additional Authorization List. . . . . WP 0109–1
EXPENDABLE AND DURABLE ITEMS LIST . . . . . WP 0110–1
Table 1. Expendable and Durable Items List. . . . . WP 0110–1

INDEX Index–1

FOLDOUT FIGURES

HOW TO USE THIS MANUAL

Operators shall familiarize themselves with the format and contents of this Technical Manual (TM) prior to operating or performing operator maintenance procedures. Learning how to use this TM will enable personnel to quickly locate information, gain proper knowledge of the equipment, and shorten the time necessary to complete the required procedure.

The manual has five chapters:

Chapter 1 – provides General Information, Equipment Description, and Theory of Operation.

Chapter 2 – contains Operator Instructions.

Chapter 3 – provides Troubleshooting Procedures for operator/crew.

Chapter 4 – contains Preventive Maintenance Checks and Services (PMCS) instructions for the operator for Before, During, After, Weekly, and Monthly checks and Maintenance Instructions, including Lubrication Instructions for operator/crew.

Chapter 5 – provides Supporting Information, including References, Components of End Item (COEI) and Basic Issue Items (BII) Lists, Additional Authorization List (AAL), and Expendable and Durable Items List.

Rear Matter – provides an alphabetical index, DA 2028 forms, metric conversion table, and PIN.

Each chapter is divided into separate work packages, which are identified by a four-digit number in the upper corner of each page. The Table of Contents in the front of the manual lists all chapters and work packages by title and number.

Three types of notations appear throughout the manual:

WARNINGS identify risk of injury or death to personnel.

CAUTIONS identify risk of damage to equipment.

NOTES provide additional explanations or helpful information for the user.

A Warning Summary appears at the front of the manual. Become familiar with these warnings before operating or performing maintenance on the Mine Resistant Ambush Protected (MRAP) Long Wheel Base (LWB) Ambulance vehicle.

PMCS OVERVIEW

To ensure the vehicle is ready for operation at all times, it must be inspected on a regular basis so items to be serviced may be found before they result in serious damage, equipment failure, or injury to personnel. The PMCS table contains systematic inspections and services to maintain the vehicle in mission-ready condition.

TROUBLESHOOTING PROCEDURES OVERVIEW

Troubleshooting has an introduction to it explaining some of the things you need to look for. This manual cannot list all symptoms or malfunctions that may occur, nor all tests or inspections or corrective actions. If a symptom or malfunction is not listed or is not corrected by listed corrective actions, notify Field Level Maintenance.

Troubleshooting procedures begin at the Troubleshooting Index work package, which will direct the crew member to a solution for a symptom or malfunction.

WORK PACKAGE FEATURES

The work package format contains a section titled “INITIAL SETUP.” Within this section are headings titled:

Tools and Special Tools: Common tools required to perform maintenance tasks. These common tools should be on hand to properly perform the task. If no tools or special tools are required, this heading will not be used.

Materials/Parts: Mandatory replacement materials or parts (gaskets, O-rings, sealant, etc.). If no mandatory replacement materials/parts are required, this heading will not be used.

Personnel Required: The number of personnel needed to perform a task. If only one crewmember is needed, this heading will not be used.

HOW TO USE THIS MANUAL – (Continued)

References: TMs and work packages needed to complete the task. If no references are listed within the body of the work package, this heading will not be used.

Equipment Conditions: Conditions that must exist before starting the task. If no equipment conditions are required, this heading will not be used.

CHAPTER 1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION

FOR

MINE RESISTANT AMBUSH PROTECTED (MRAP) VEHICLE

CREW MAINTENANCE

GENERAL INFORMATION

SCOPE

This technical manual contains operator level instructions for operating and servicing the Mine Resistant Ambush Protected (MRAP) M1266A1. It includes cautions and warnings to operators regarding safety for personnel and equipment, the description and function of all controls and indicators, an on-vehicle loading plan, and troubleshooting procedures to be followed by operators if the vehicle malfunctions. It also contains operator maintenance checks and service procedures and other operator level supporting information.

- **Type of manual –** Operator/crew
- **Model number and equipment names:**

  M1266A1

- **Purpose of equipment –** This vehicle is used as an armored ambulance for medical evacuation from forward areas. It carries and powers medical equipment that supports en route care to injured personnel. Inherent armor protects vehicle occupants from small arms fire, fragmenting munitions, and blast events.

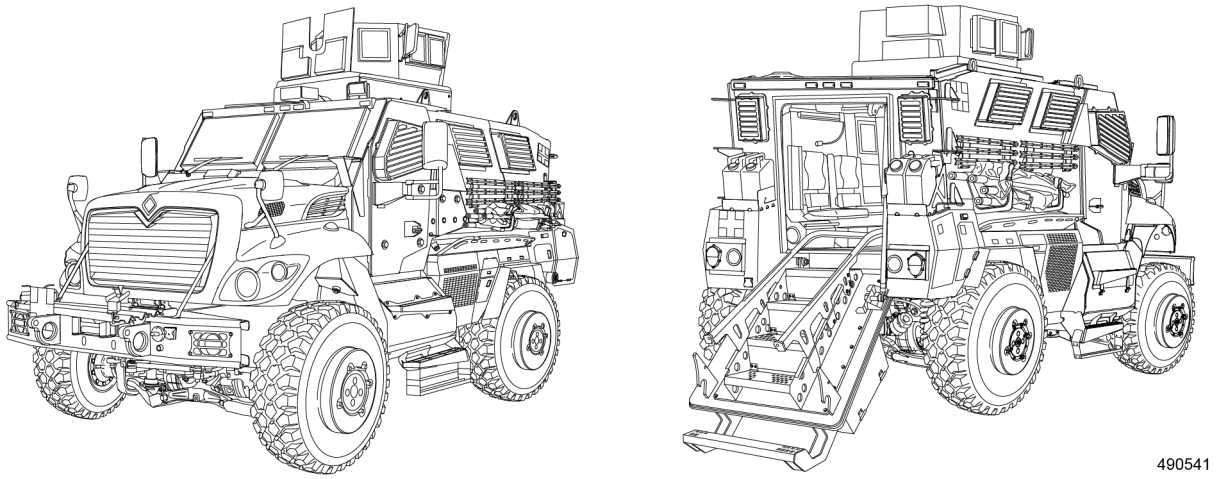


Figure 1. M1266A1.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR) and PRODUCT QUALITY DEFICIENCY REPORTS (PQDR).

If your MRAP vehicle needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance.

All non-Aviation/Missile Warranty, EIRs and PQDRs must be submitted through the Product Data Reporting and Evaluation Program (PDREP) Website. The PDREP site is: https://www.tacom.army.mil/ilsc/tulsa/index.html.

If you do not have internet access, you may submit your information using an SF 368 (Product Quality Deficiency Report). You can send your SF 368 using email, regular mail, or fax using the addresses/fax numbers specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items. The term “corrosion” means the deterioration of a material or its properties

due to a reaction of that material with its chemical environment. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue, and/or cracking. Plastics, composites, and rubbers can also degrade (also considered to be corrosion based on the above definition of corrosion). Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents), or photolytic (light, typically ultraviolet) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling, and/or breaking. The US Army has defined the following nine (9) forms of corrosion used to evaluate the deterioration of metals. These shall be used when evaluating and documenting corrosion.

UNIFORM (or general attack): Affects a large area of exposed metal surface, like rust on steel or tarnish on silver. It gradually reduces the thickness of the metal until it fails.

CREVICE: Occurs in crevices created by rubber seals, gaskets, bolt heads, lap joints, dirt or other surface deposits. It will develop anywhere moisture or other corrosive agents are trapped and unable to drain or evaporate.

SELECTIVE LEACHING: One element, usually the anodic element of an alloy, corrodes away, leaving the cathodic element. This can create holes in metal.

INTERGRANULAR: Metal deterioration caused by corrosion on the bonds between or across the grain boundaries of the metal. The metal will appear to be peeling off in sheets, flaking, or being pushed apart by layers. A particular type of intergranular corrosion is exfoliation.

PITTING: This can result from conditions similar to those for crevice corrosion. Pits can develop on various materials due to their composition. Rifle boxes are big victims of pitting.

EROSION: Results when a moving fluid (liquid or gas) flows across a metal surface, particularly when solid particles are present in the fluid. Corrosion actually occurs on the surface of the metal, but the moving fluid washes away the corrosion and exposes a new metal surface, which also corrodes.

FRETTING: Occurs as a result of small, repetitive movements (e.g., vibration) between two surfaces in contact with each other. It's usually identified by a black powder corrosion product or pits on the surface.

GALVANIC: Occurs when two different types of metal come in contact with each other, like steel bolts on aluminum, for example. This is a common problem on aircraft because of their mix of metals.

STRESS: Term used to describe corrosion cracking and corrosion fatigue. Where an item is not ready/available due to one of these forms of corrosion, it shall be recorded as a corrosion failure in the inspection record and the appropriate code (170) for corrosion shall be used when requesting/performing maintenance.

Refer to TB-43-0213 (Corrosion Prevention and Control (CPC) for Tactical Vehicles) for additional information.

SF Form 368, Product Quality Deficiency Report should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE

Command decision, according to the tactical situation, will determine when the using organization is to destroy a vehicle. A destruction plan will be prepared by the using organization, unless one was prepared by a higher authority. For general vehicle destruction procedures, refer to TM 750-244-6, Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-Automotive and Armaments Command (TACOM)).

PREPARATION FOR SHIPPING OR STORAGE

All doors, except the driver door, should be tied closed. All material that exceeds the width of the vehicle should be removed and secured inside the vehicle. All antennas should be lowered and tied down.

Turn off all Government Furnished Equipment (GFE).

VEHICLE STORAGE

The unit is responsible for adequate storage and protection of new vehicles. Maintain records for vehicles in storage so that proper inspection and maintenance can be performed. Perform the following procedures before storing vehicle:

STORAGE DURATION 2 MONTHS OR LESS

1. Wash vehicle with warm water and mild soap when surface is cool to touch. Refer to WP 0089, Vehicle Cleaning.
2. Inspect painted surfaces; touch up all exposed primed or raw metal areas with Chemical Agent Reactive Coating (CARC) paint to prevent rust. Notify Field Level Maintenance.
3. Check radiator overflow reservoir. Refer to WP 0093, Coolant Service.
4. Cover open ends of vents and air intake for the Heating, Ventilation, and Air Conditioning (HVAC) system.
5. Check VOLTS gauge, 24V system. Gauge should read no less than 24V. If less than 24V, charge batteries.
6. Ensure fuel fired heater is turned off. Refer to WP 0019, Operation Under Usual Conditions - Fuel Fired Heater Operation.
7. Fill fuel tank to maximum level. Refer to WP 0034, Operation Under Usual Conditions - Vehicle Fueling Operation. Ventilate system by releasing tank cap.
8. Inspect vehicle prior to storage by performing the next appropriate Preventive Maintenance Checks and Services (PMCS) and make any repairs necessary. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS). Ensure that maintenance services and lubrication are up to date.
9. Remove medical equipment and store separately, In Accordance With (IAW) Post or Storage Site Standard Operating Procedure (SOP).

STORAGE DURATION OVER 2 MONTHS, UP TO 180 DAYS

Units in storage for longer than 2 months require the following additional procedures:

1. Perform the next scheduled major maintenance service.
2. Inspect for the following:
   a. Leaks
   b. Low or flat tires
   c. Corrosion
   d. Water in compartments
   e. Other problems or shortcomings
3. Start and run vehicle at high idle until it reaches operating temperature. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

4. Drive the vehicle a short distance. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures. Shift the transmission in various ranges. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation. Apply and release the service and parking brake systems. Refer to WP 0014, Operation Under Usual Conditions - Brake System and Anti-Lock Brake System (ABS) Operation.
5. To remove surface charge from the battery operate heater and air conditioner. Refer to WP 0028, Operation Under Usual Conditions - Life Support System (LSS)/Heating Ventilation Air Conditioning (HVAC) Operation. Turn on headlights and other accessories for a few minutes. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
6. Turn off heater, air conditioner, and any other accessories. Refer to WP 0028, Operation Under Usual Conditions - Life Support System (LSS)/Heating Ventilation Air Conditioning (HVAC) Operation.
7. Shut off lights. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
8. Park vehicle and shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
9. Cover open ends of exhaust and air intake for the HVAC system. Notify Field Level Maintenance.
10. Disconnect electrical connector from Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) and attach warning tag to AFES control panel. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.
11. Disconnect and remove batteries and store in a cool, well-ventilated area. Recharge and clean before use. Notify Field Level Maintenance.
12. Check radiator overflow reservoir for proper level. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).
13. Lubricate all exposed components. Refer to WP 0106, Lubrication Instructions.
14. For vehicles exposed to ultraviolet rays of the sun, cover inside surfaces of windshield and windows to shade the interior.
15. After every 3 months of additional storage, repeat items 2 through 12.
16. Remove medical equipment and store separately, IAW Post or Storage Site SOP.

STORAGE FACILITIES

Whenever possible, store vehicles indoors, protected from sunlight, in a dry, well-ventilated area. If indoor storage is not available, select storage lots to eliminate conditions that cause deterioration.

Park away from transformers and/or electrical motors. When the protective wax in tire compound cracks, ozone in the air attacks the exposed areas.

Park away from trees, high weeds, and grass to prevent damage from tree or weed sap and to minimize bird and insect stains.

Park away from railroad tracks, paint shops, smoky industrial areas, and locations of possible road splash contact.

After parking vehicle, chock wheels.

NOMENCLATURE CROSS-REFERENCE LIST

This listing includes the nomenclature cross references used in this manual.

OFFICIAL NOMENCLATURE	COMMON NAME
Cable Assembly, Power, Electrical	Slave Cable
Cutter Cable, Vehicle Mounted	Seat Belt Cutter
Lock Removal Tool	Universal Combat Lock Tool

LIST OF ABBREVIATIONS/ACRONYMS

ABBREVIATION	DEFINITION
A or amp	Ampere
AAL	Additional Authorization List
ABS	Anti-lock Brake System
AC	Alternating Current
A/C	Air Conditioner
ACC	Accessory
ACCEL	Accelerate
ADJ	Adjust
AF	Active Fault
AFES	Automatic Fire Extinguishing System
AR	Army Regulation
BBU	Battery Backup Unit
BE	Bale
BEATS	Blast Energy Attenuating Turret Seat
BII	Basic Issue Items
BIT	Built In Test
B.O.	Blackout
BX	Box
C	Celsius
CC	Cross-Country
CAC	Charge Air Cooler
CAGEC	Commercial and Government Entity Code
CN	Can
CARC	Chemical Agent Resistant Coating
cm	Centimeter
COEI	Components of End Item
CPC	Corrosion Prevention and Control
CTIS	Central Tire Inflation System
D	Drive
DA	Department of the Army
DC	Direct Current
DCDL	Driver-Controlled Full Locking Differential
DDM	Driver Display Module
DoD	Department of Defense
DTC	Diagnostic Trouble Code

E	Emergency
EA	Each
ECM	Engine Control Module
ECU	Electronic Control Unit
EIC	End Item Code
EIR	Equipment Improvement Recommendation
ESC	Electronic Stability Control
ESD	Electrostatic Discharge
F	Fahrenheit
FM	Field Manual
FRT	Front
FSS	Fire Suppression System
ft	Feet
gal, GL, or GAL	Gallon
GFCI	Ground Fault Circuit Interrupter
GFE	Government Furnished Equipment
HI	High
hp	Horsepower
HVAC	Heating, Ventilation, and Air Conditioning
HY	Highway
IAW	In Accordance With
ICP	Injection Control Pressure
ICS	Interactive Communication System
IED	Improvised Explosive Device
IGRS	Improved Gunner Restraint System
in.	Inch
IP	Instrument Panel
IR	Infrared
ISS	Independent Suspension System
ITDS	Improved Turret Drive System
IUID	Item Unique Identification
kg	Kilogram
km	Kilometer
kPa	Kilopascal
kph	Kilometers Per Hour
L	Liter
lb	Pound
lb-ft	Pound Force Foot
LED	Light Emitting Diode
LO	Low
LSS	Life Support System
LWB	Long Wheel Base
m	Meter
mA	Milliamps
MAX	Maximum
MEDEVAC	Medical Evacuation
MES	Medical Equipment Set
mi	Miles

MIN	Minimum
mm	Millimeter
mpg	Miles Per Gallon
mph	Miles Per Hour
MRAP	Mine Resistant Ambush Protected
MTOE	Modified Table of Organization and Equipment
MVLS	Master Vehicle Light Switch
MX	One Thousand
N	Neutral
NATO	North Atlantic Treaty Organization
NBC	Nuclear Biological and Chemical
N·m	Newton Meter
NSN	National Stock Number
OLI	Overload Interrupt
OGPK	Objective Gunners Protection Kit
PDM	Power Distribution Module
PG	Package
PAM	Pamphlet
PDREP	Product Data Reporting and Evaluation Program
PMCS	Preventive Maintenance Checks and Services
P/N	Part Number
POL	Petroleum Oils and Lubricants
PQDR	Product Quality Deficiency Report
PR	Pair
psi	Pounds Per Square Inch
pt	Pint
qt, QT	Quart
qty	Quantity
R	Reverse
R/A	Recycled Air
RACC	Rugged All-Purpose Cargo Carrier
RF	Run Flat
RO	Roll
rpm	Revolutions Per Minute
RPG	Rocket Propelled Grenade
RR	Rear
SAE	Society of Automotive Engineers
SAF	Small Arms Fire
SOP	Standard Operating Procedure
SS	Sand/Snow/Mud
TACOM	Tank-Automotive and Armaments Command
TAMMS	The Army Maintenance Management System
TB	Technical Bulletin
TCM	Transmission Control Module
TDA	Tables of Distribution and Allowances
TM	Technical Manual
TLR	Trailer
TOE	Table of Organization and Equipment

UCLT	Universal Combat Lock Tool
U/I	Unit of Issue
US	United States
V	Volt
VEE	Vehicle Emergency Egress
VSM	Vital Signs Monitor
WP	Work Package
XFER	Transfer
+/-	± plus or minus
>	greater than
<	less than
°	degrees (temperature)

SAFETY, CARE, AND HANDLING

The following procedures should be observed when handling all Electrostatic Discharge (ESD) sensitive components and units containing such components. Failure to observe all of these precautions can cause permanent damage to the electrostatic device. This damage can cause the device to fail immediately or at a later date when exposed to an adverse environment.

1. Turn off and/or disconnect all power, signal sources, and loads used with the unit.
2. Place the unit on a grounded non-conductive work surface.
3. Ground the repair operator using a non-conductive wrist strap or other device using 1 mega-ohm series resistor to protect the operator.
4. Ground any tools (including soldering equipment) that will contact the unit. Contact with the operator's hand provides sufficient ground for tools that are otherwise electrically isolated.
5. All electrostatic sensitive replacement components are shipped in non-conductive foam or tubes and must be stowed in the original shipping container until installed.
6. When these devices and assemblies are removed from the unit, they should be placed on the non-conductive work surface or in non-conductive containers.
7. When not being worked on, place disconnected circuit boards in plastic bags that have been coated or impregnated with a non-conductive material.
8. Do not handle these devices unnecessarily or remove them from their packages until actually used or tested.

ITEM UNIQUE IDENTIFICATION

The equipment components are marked with item unique identification (IUID) markings such as data plates, decals, or etchings. These markings must be scanned during performance of procedures to remove and replace the items marked or when turning in items or receiving them from supply or another unit. For information on location of the IUID marking for the end item, refer to WP 0073 Stowage and Decal/Data Plate Guide.

END OF WORK PACKAGE

CREW MAINTENANCE

EQUIPMENT DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Characteristics.

The Mine Resistant Ambush Protected (MRAP) M1266A1 vehicle enhances the effectiveness of ground combat forces in operations against unconventional enemy forces. The vehicle provides occupants with enhanced personnel protection and increased survivability.

The primary mission of the vehicle is Medical Evacuation (MEDEVAC). MEDEVAC is the timely, efficient movement and en-route care by medical personnel of the wounded, injured, or ill persons from the battlefield or other locations to military treatment facilities. The provision of en route care on medically equipped vehicles enhances the patient's potential for recovery and may reduce long-term disability by maintaining the patient's medical condition in a more stable manner (FM 4-02.2). Missions for ambulances may also include being part of convoy operations, troop transport, medical resupply, in addition to normal MEDEVAC and litter/ambulatory transport. The vehicle has ground mobility capable of operating in a threat environment, including ambushes employing mines, Improvised Explosive Devices (IEDs), Rocket Propelled Grenades (RPG), and Small Arms Fire (SAF). The vehicle will operate in most weather and terrain conditions, including off-road operations.

The major sub-systems of the vehicle include the powertrain system, electrical system, lighting systems, pneumatic system, body and chassis system, Life Support System (LSS)/Heating, Ventilation, and Air Conditioning (HVAC), Automatic Fire Extinguishing System (AFES), Fire Suppression System (FSS), and Central Tire Inflation System (CTIS). The vehicle features a V-shaped hull, raised chassis, integral armor, and blow-off wheels to provide increased survivability through improved mine and IED protection.

The vehicle is capable of carrying four passengers and requires three crew members to effectively operate the vehicle. The vehicle is capable of carrying a manned, top-mounted machine gun. The vehicle is also equipped with an Interactive Communication System (ICS) intercom and will normally carry radios for communications to higher, adjacent, and supporting units.

The M1266A1 vehicle is four-wheel drive. The vehicle is designed for support of small-unit combat operations in urban or confined areas, including:

- En-Route Care services
- MEDEVAC (litter/ambulatory)
- Medical Resupply
- Convoy security
- Casualty evacuation
- Command and control
- Troop and cargo transport
- Reconnaissance support
- Communications
- Mounted patrol support

Capabilities.

The vehicle provides integral protection for the crew and passengers from shock, fragments, and other effects of mine blasts. They provide crew protection even when a mine is detonated under any wheel or directly under the crew compartment. The vehicle provides crew survivability against antitank mines, SAF, IEDs, and overhead airburst. Additional crew protection is provided by the five-point restraint system and shock absorbing seats.

The vehicle has the capability of communicating with other vehicles to locate, prevent, and defend against the effects of mines and IEDs. Communications equipment includes:

- Department of Defense tactical radios
- Satellite communication
- Radio Frequency Jamming Devices
- Intercom

The vehicle can contain situational awareness systems to assist in avoiding mines and IEDs by identification of friendly versus enemy forces and location of potential hazards relative to the vehicle position.

The vehicle is also capable of:

- Operating in temperatures ranging from -25º to +125ºF (-32º to +52ºC) without Arctic kits.
- Fording water up to 36 in. (91 cm) deep.
- Climbing and descending up to 60 percent grades.

Features.

- Anti-lock Brake System (ABS)
- Rear Ramp Release Valve
- LSS/HVAC
- Flat towing equipped
- AFES
- FSS
- Run-flat tires
- Five-point restraint seating system
- Blast Energy Attenuating Turret Seat (BEATS)
- Improved Gunner Restraint System (IGRS)
- Intra-vehicle intercom system
- Blackout lighting and night vision capabilities
- Electric winch
- Improved Turret Drive System (ITDS)
- Weapon mounting capability
- Roof mounted spotlight
- Heated mirrors
- Tilt steering wheel
- Two-speed with interval windshield wipers and washers
- Vehicle Emergency Egress (VEE) windows
- Fuel fired heater
- Independent Suspension System (ISS)
- Electronic Stability Control (ESC)
- CTIS
- Locking rear differential
- Objective Gunners Protection Kit (OGPK)
- Litter loading system (rails/trolleys)
- Blast attenuating ambulatory seating
- Blast attenuating litter transport system
- Litter hoist system
- Medical equipment mounting provisions
- Hospital grade 110V power system
- Casualty treatment lighting (focused/general illumination)
- Medical equipment storage

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS

PHOTOLUMINESCENT EGRESS TAPE MARKINGS

The vehicle is equipped with photoluminescent egress tape. This is a high performance rechargeable luminous film for safety and emergency exit “glow-in-the-dark” signage and markings. This photoluminescent egress tape is located on minimum required interior areas and components to assist personnel in the event of power loss during a rollover or other emergencies. You will see the photoluminescent egress tape on the following items:

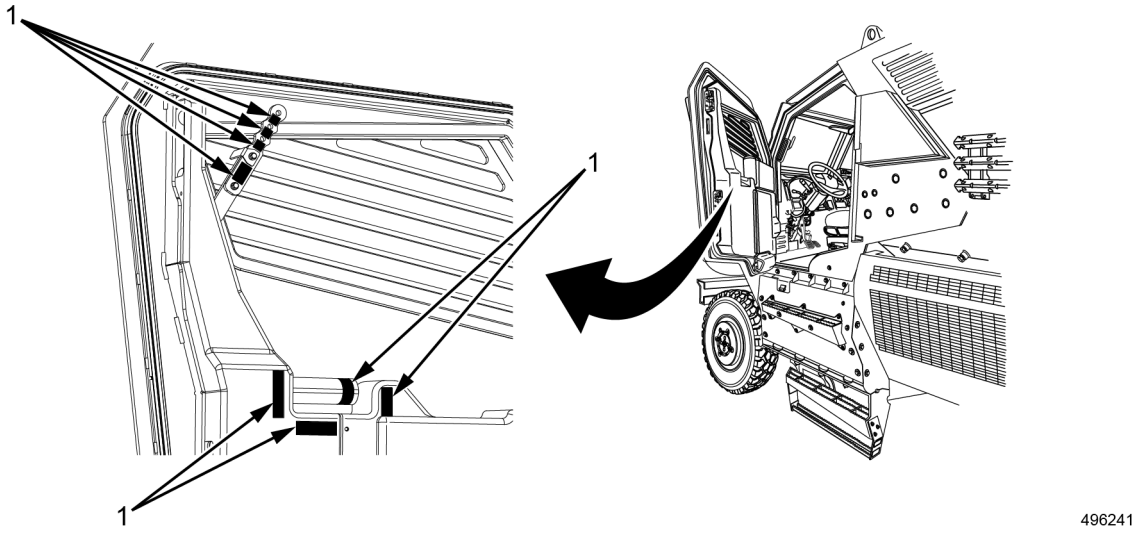


Figure 1. Front Doors.

NOTE

Driver door shown; commander door similar.

Photoluminescent egress tape (Figure 1, Item 1) is located on door handle and combat lock.

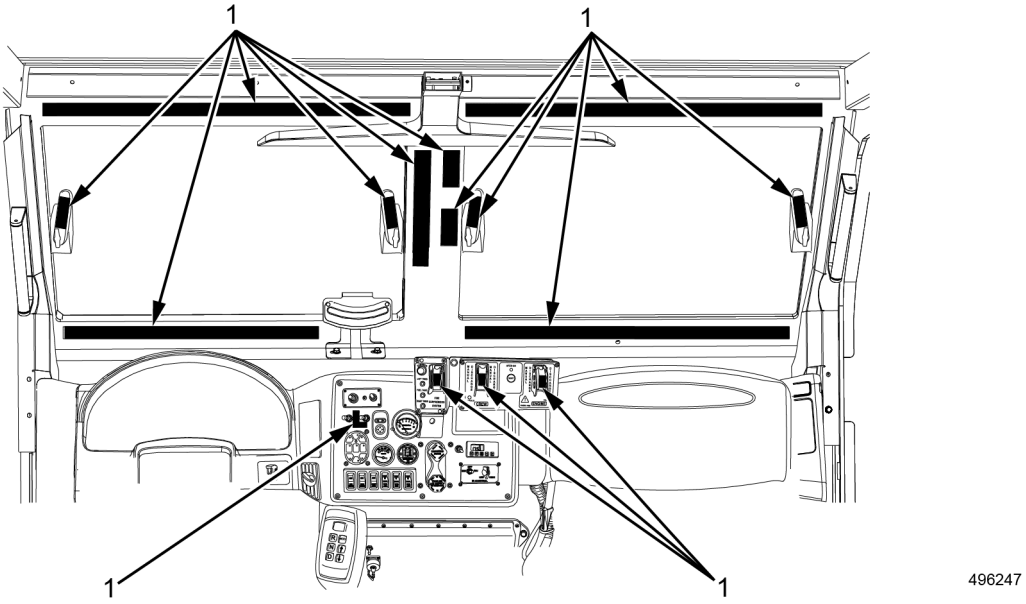


Figure 2. Rear Ramp Controls - Front AFES and FSS Controls and VEE Windows.

NOTE

CTIS switches and night vision camera bracket removed from figure for clarity.

Photoluminescent egress tape (Figure 2, Item 1) is located around VEE windows, on window handle, rear ramp operations front controls, and AFES/FSS controls.

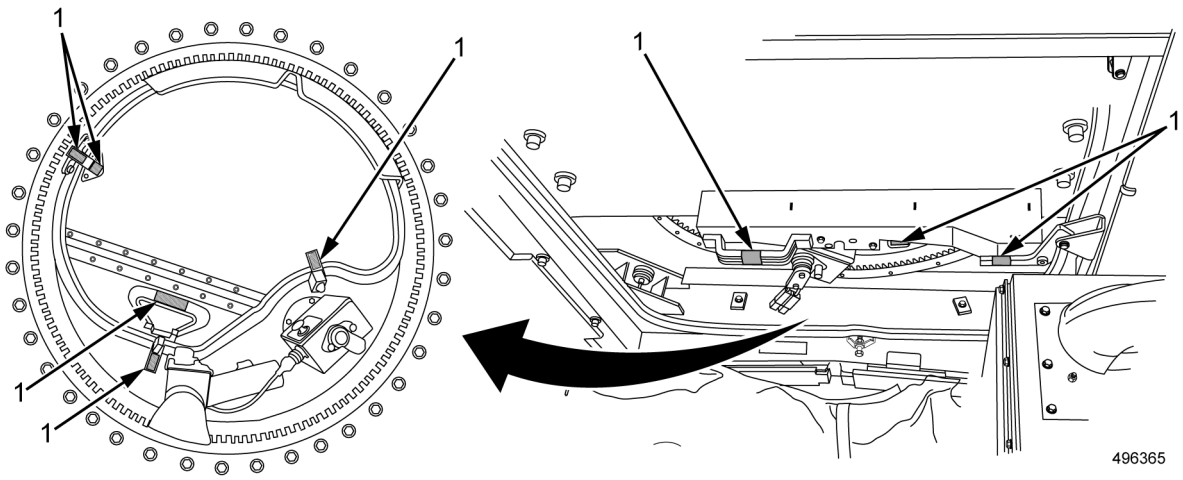


Figure 3. Gunner Hatch.

Photoluminescent egress tape (Figure 3, Item 1) is located on hatch latches and hatch handle.

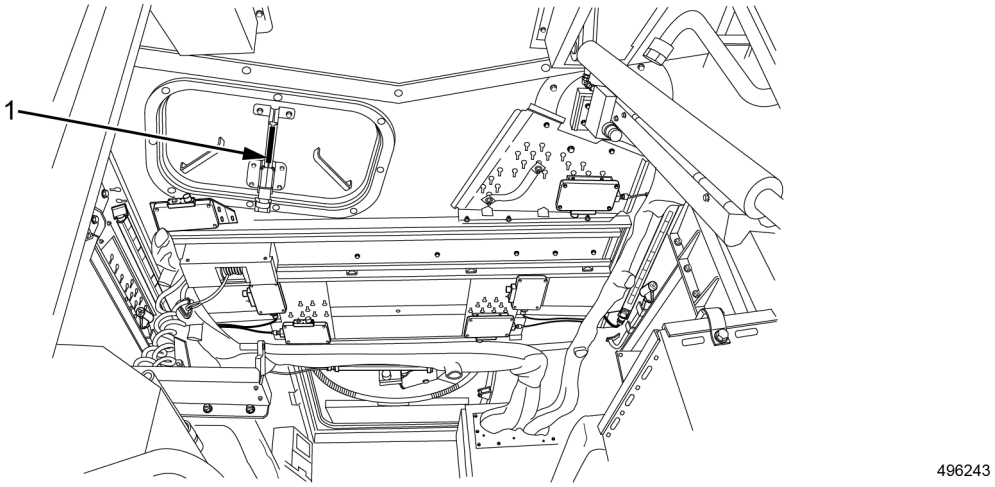


Figure 4. Emergency Hatch.

Photoluminescent egress tape (Figure 4, Item 1) is located on emergency hatch release handle.

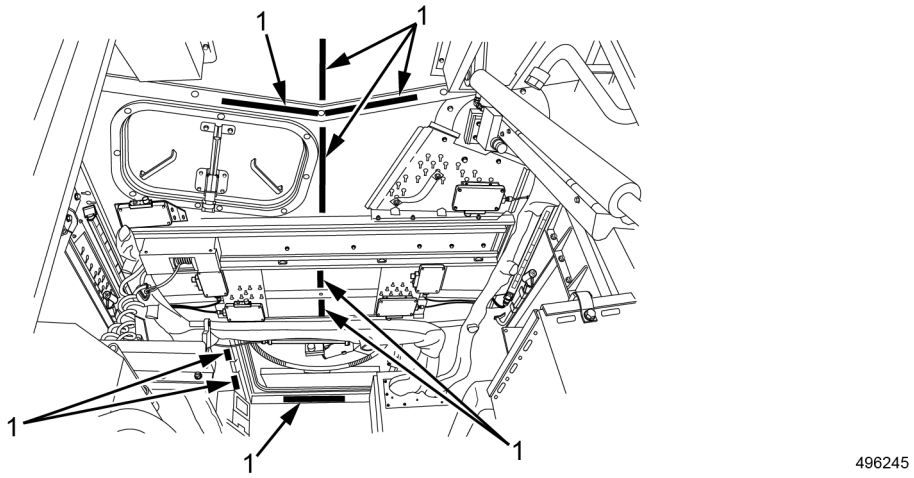


Figure 5. Roof.

Photoluminescent egress tape (Figure 5, Item 1) is located on roof, in center, between both hatches.

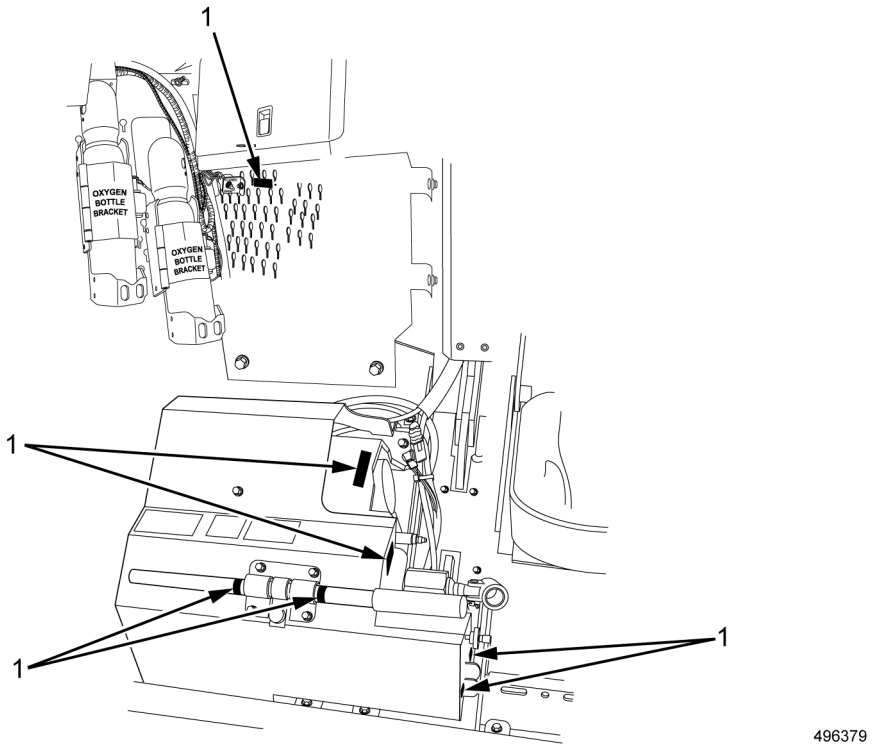


Figure 6. Ramp Rear Controls.

Photoluminescent egress tape (Figure 6, Item 1) is located on manual hydraulic pump, electric switch, manual pump override, and manual pump handle.

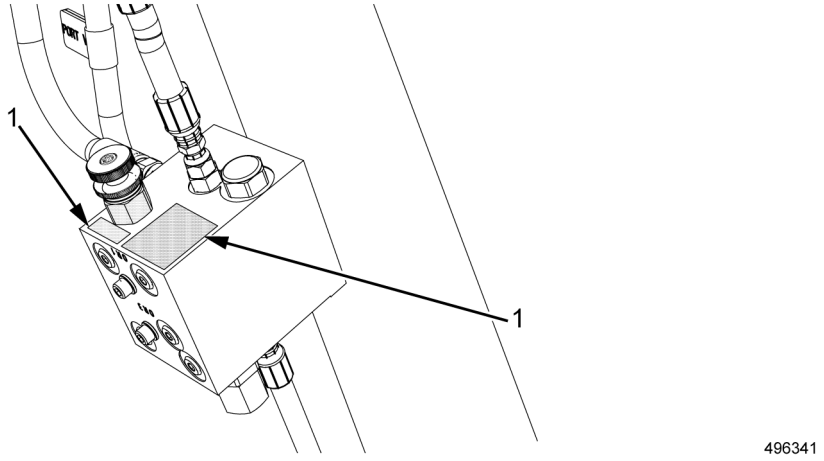


Figure 7. Rear Ramp Release Valve.

Photoluminescent egress tape (Figure 7, Item 1) is located on the rear ramp release valve.

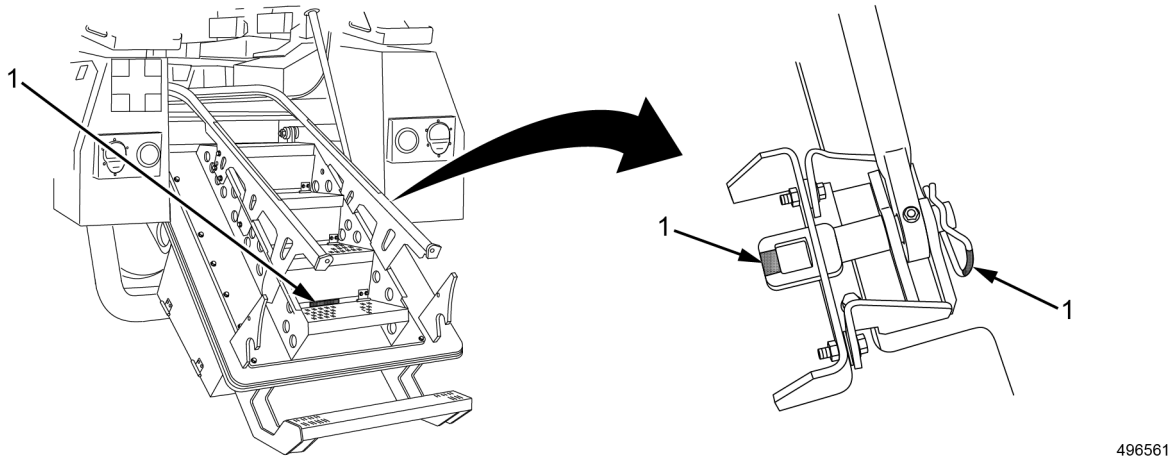


Figure 8. Rear Ramp.

Photoluminescent egress tape (Figure 8, Item 1) is located on rear ramp/door step and rear door pin manual override.

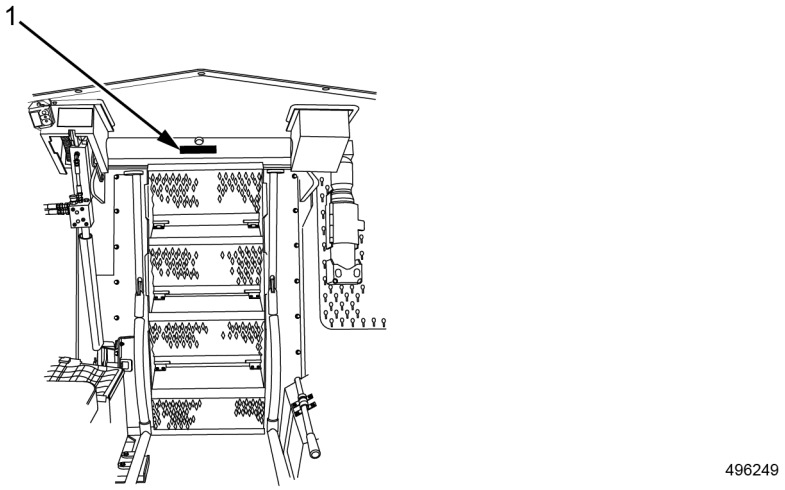


Figure 9. Rear Ramp Operation - Emergency Manual Override.

Photoluminescent egress tape (Figure 9, Item 1) is located on emergency ramp door override on roof.

POWERTRAIN SYSTEM

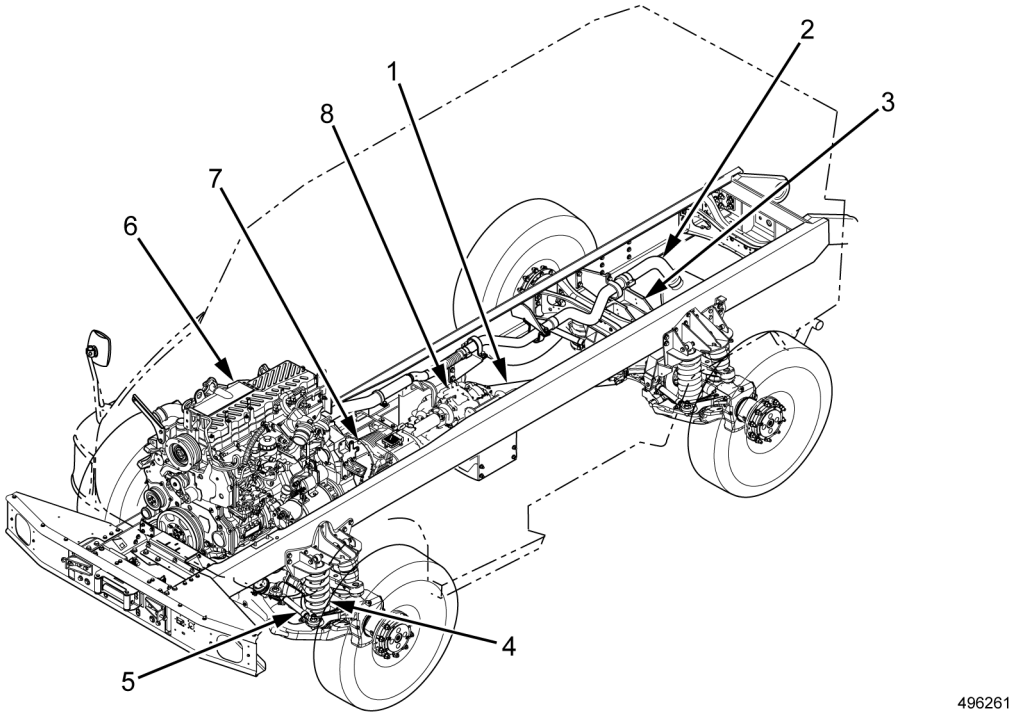


Figure 10. Powertrain.

The powertrain system consists of the following major components: engine (Figure 10, Item 6), transmission (Figure 10, Item 7), transfer case (Figure 10, Item 8), exhaust (Figure 10, Item 2), rear prop shaft/U-joints (Figure 10, Item 1), rear axle (Figure 10, Item 3), front axle (Figure 10, Item 4), and steering (Figure 10, Item 5).

Engine.

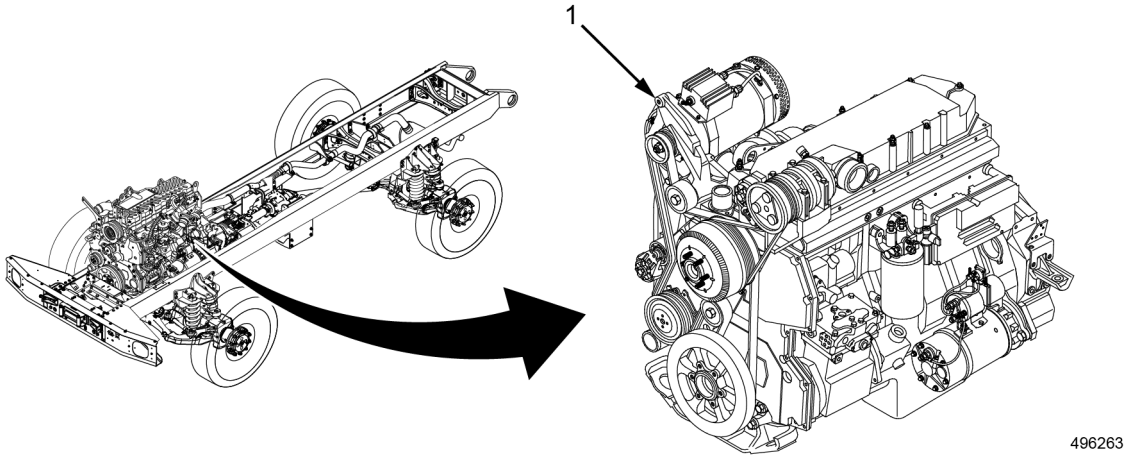


Figure 11. Engine.

The vehicle is powered by an in-line, six-cylinder, fuel-injected, turbocharged diesel engine (Figure 11, Item 1).

Transmission.

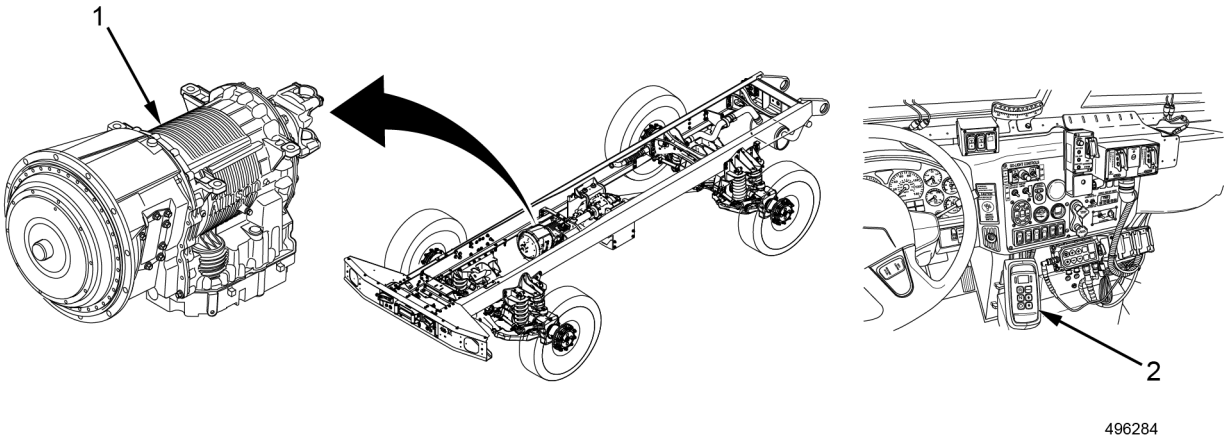


Figure 12. Transmission.

The engine is coupled with a five-speed automatic transmission (Figure 12, Item 1) with push button controls (Figure 12, Item 2).

Transfer Case.

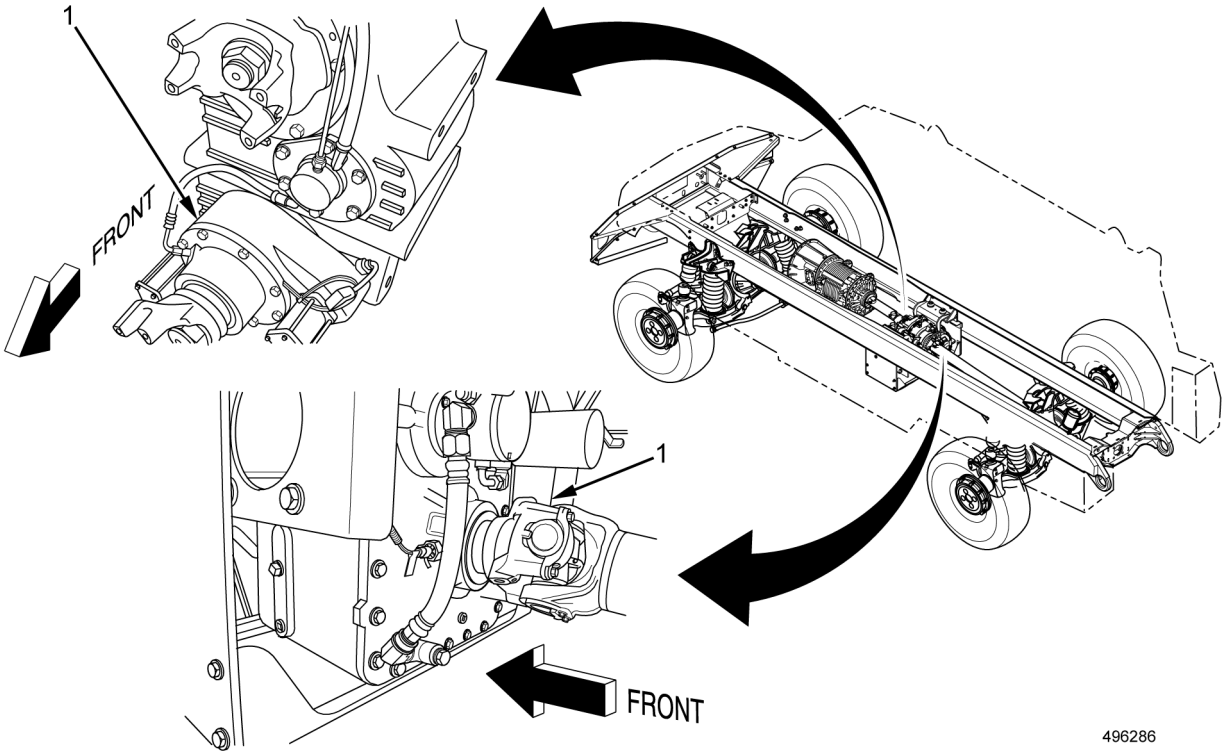


Figure 13. Transfer Case.

The engine and transmission are coupled to a two-speed four-wheel-drive transfer case (Figure 13, Item 1).

Exhaust.

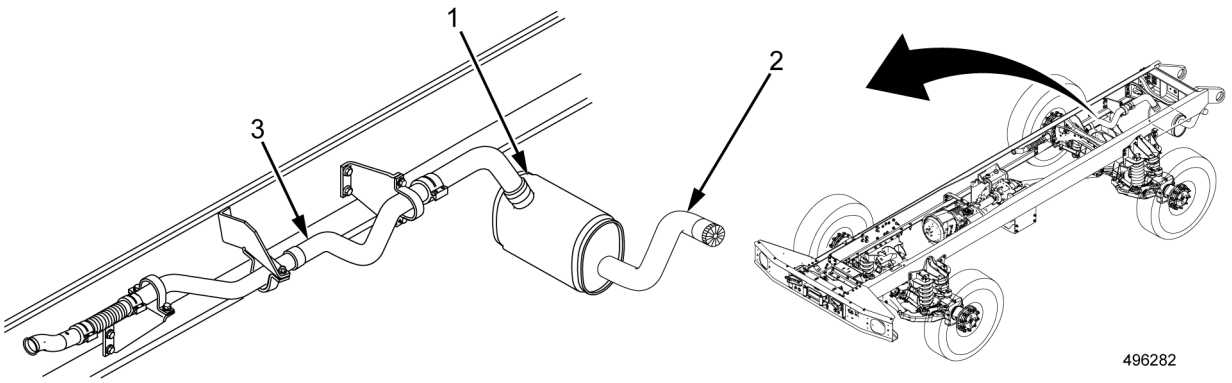


Figure 14. Exhaust Pipe, Muffler, and Tailpipe.

The exhaust system includes the exhaust pipe (Figure 14, Item 3), muffler (Figure 14, Item 1), and tailpipe assembly (Figure 14, Item 2). The exhaust pipe, muffler, and tailpipe assembly route exhaust gases away from crew and passengers, as well as reduce operating noise.

Rear Prop Shafts/U-Joints.

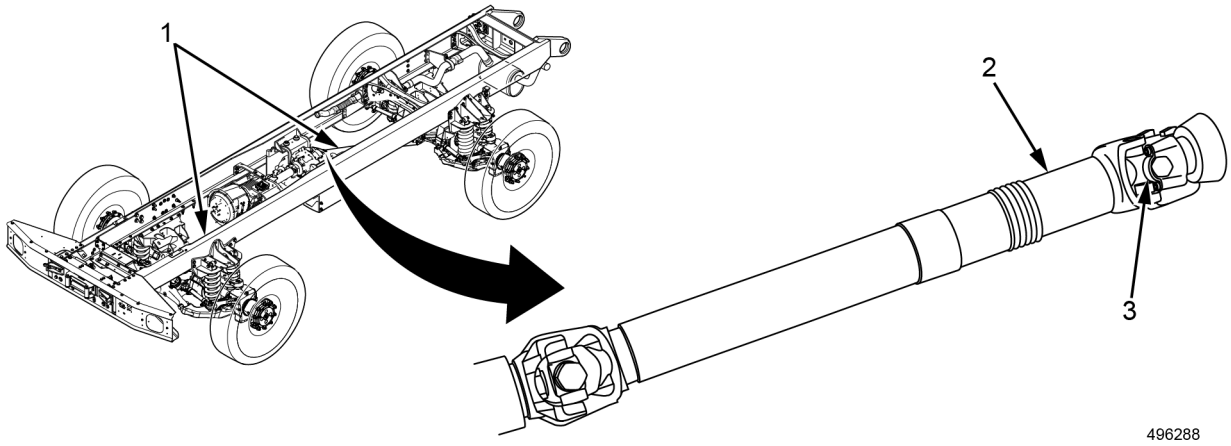


Figure 15. Rear Prop Shaft with U-Joint.

Front and rear prop shafts (Figure 15, Item 1) drive the axles. Only the rear prop shaft (Figure 15, Item 2) and U-joints (Figure 15, Item 3) are accessible to the driver.

Rear Axle.

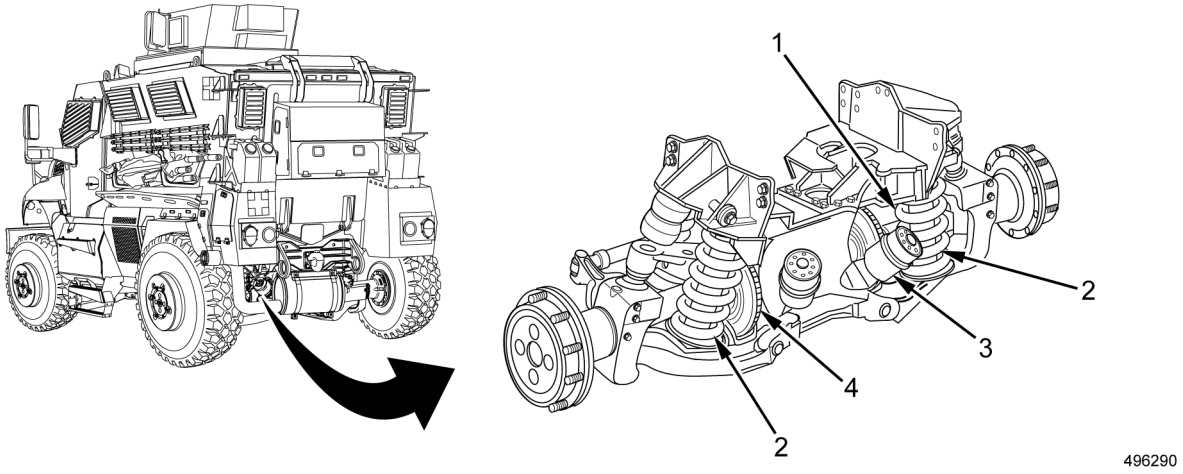


Figure 16. Rear Axle.

The rear axle is a fully independent double-wishbone design suspension. The axle assembly includes dual coil springs (Figure 16, Item 1) at each wheel with integrated passive shock absorbers (Figure 16, Item 2), differential carrier, air chamber (Figure 16, Item 3), and air chamber actuated disc brakes (Figure 16, Item 4).

Front Axle.

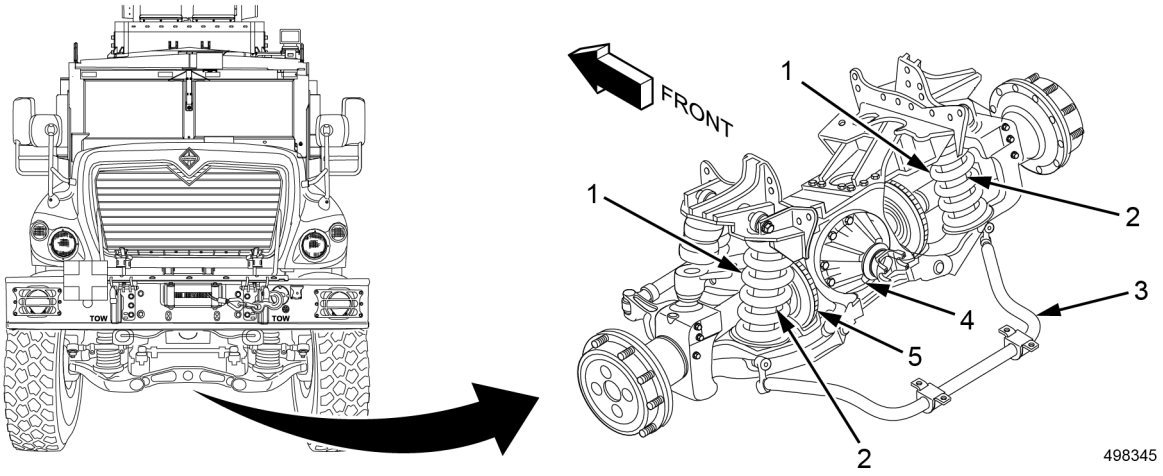


Figure 17. Front Axle.

The front axle is a fully independent double-wishbone design suspension. The axle assembly includes dual coil springs (Figure 17, Item 1) at each wheel, with integrated passive shock absorbers (Figure 17, Item 2), front sway bar (Figure 17, Item 3), differential carrier (Figure 17, Item 4), and air chamber actuated disc brakes (Figure 17, Item 5).

Steering.

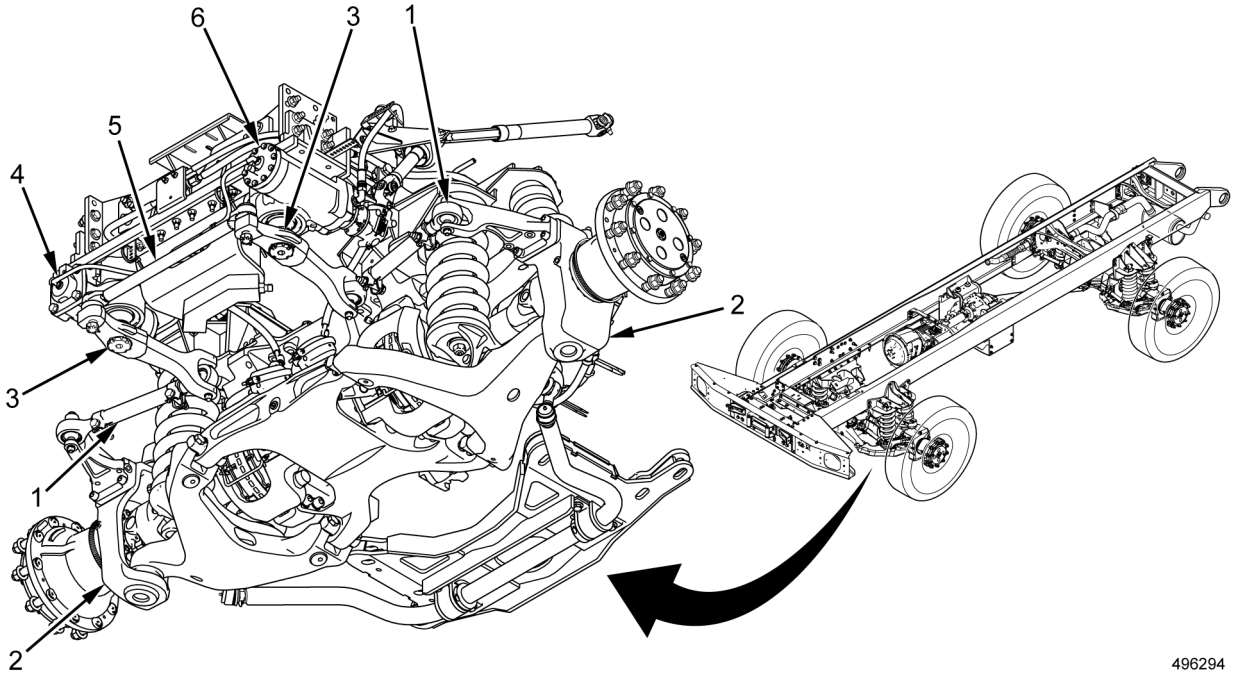


Figure 18. Steering Gears and Linkage.

The vehicle is equipped with dual steering gears (Figure 18, Item 4 and 6) which provides full-time power assist. Each steering gear connects to the applicable steering knuckle (Figure 18, Item 2) by means of a pitman arm (Figure 18, Item 3) and tie rod assembly (Figure 18, Item 1). A drag link (Figure 18, Item 5) connects the pitman arms to each other.

ELECTRICAL SYSTEM

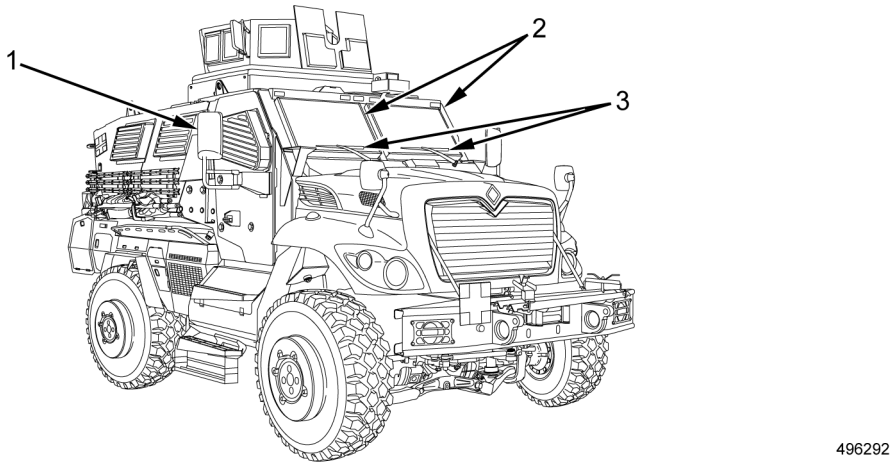


Figure 19. Exterior Electrical System.

The exterior electrical system consists of the following major components: heated windshields (Figure 19, Item 2), windshield wipers (Figure 19, Item 3), and heated mirrors (Figure 19, Item 1). The heated windshields and door mounted heated mirrors are electrically heated by wires embedded into the glass. One switch controls both the heated mirrors and heated windshields for a predetermined time.

HORNS

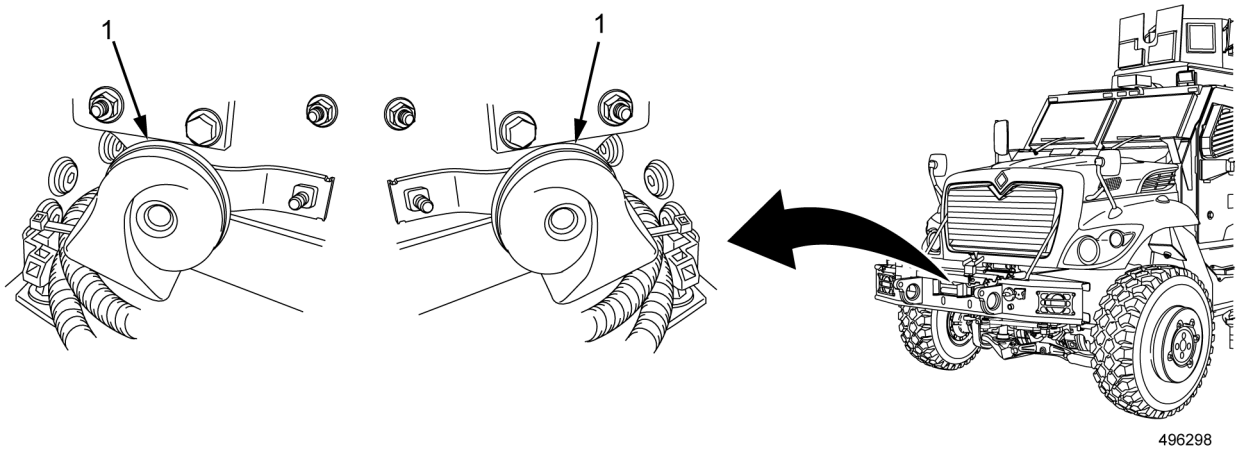


Figure 20. Horn.

Two horns (Figure 20, Item 1), are mounted behind the front bumper and activated by a steering wheel push-pad.

BATTERIES

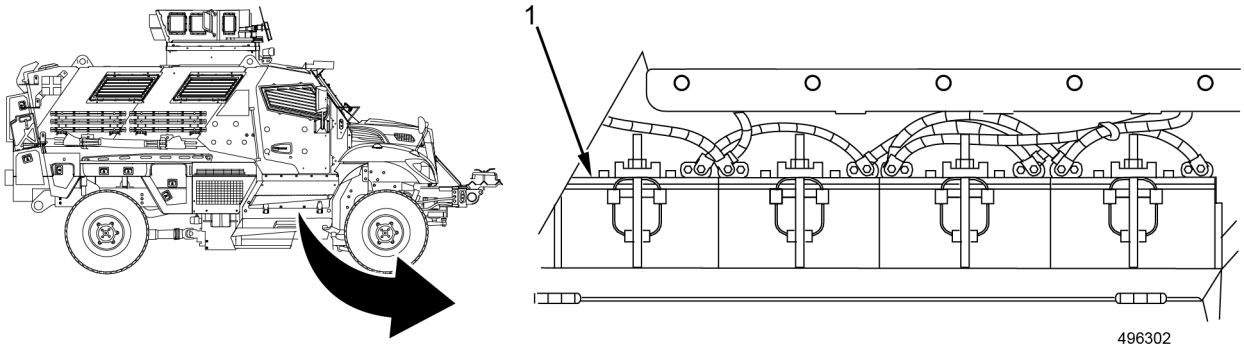


Figure 21. Batteries.

The electrical system is charged by a 24V 570-amp DC alternator, which runs while the engine is operating and charges the four 12V batteries (Figure 21, Item 1). The four 12V batteries are wired in series and parallel to power 12V and 24V electrical systems.

ITDS

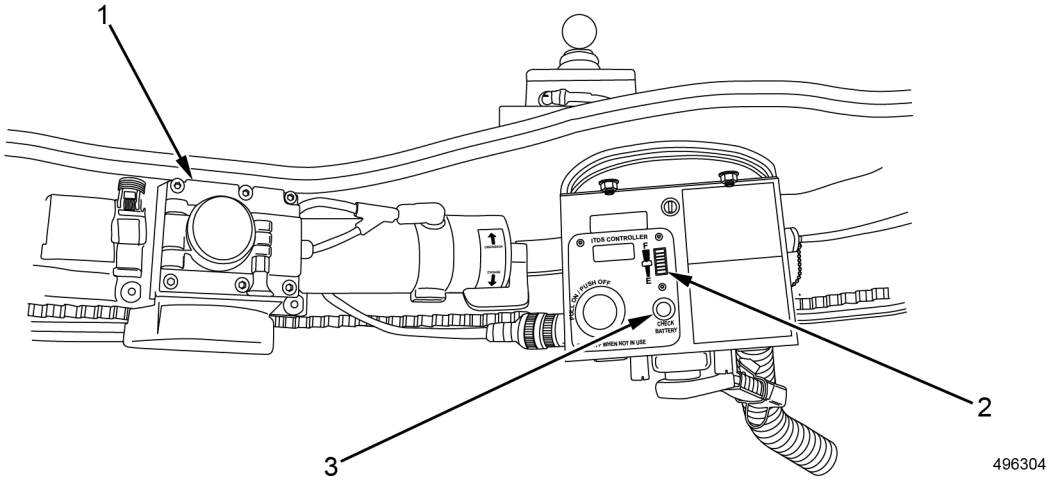


Figure 22. ITDS.

The ITDS consists of a battery operated turret control motor (Figure 22, Item 1). The ITDS batteries provide power independent of the vehicle and has a CHECK BATTERY push button (Figure 22, Item 3) and built-in battery charge indicator (Figure 22, Item 2).

110V POWER INVERTER, 110V OUTLET, AND NATO SLAVE START CONNECTOR

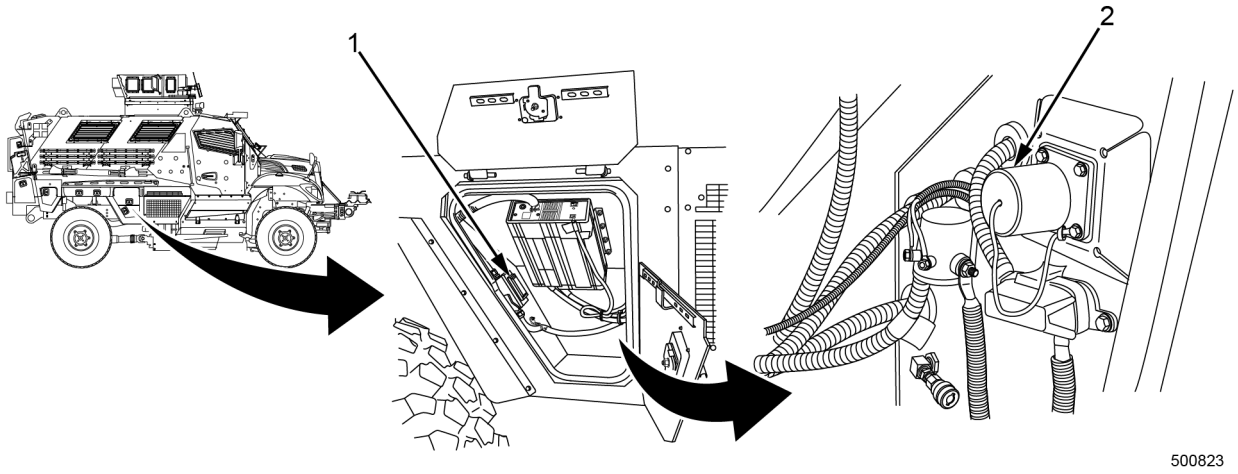


Figure 23. 110V Power Inverter, 110V Outlet, and NATO Slave Start Connector.

The exterior 110V outlet (Figure 23, Item 1) is used to power up auxiliary equipment.

The NATO slave start connector (Figure 23, Item 2) is used to slave a disabled vehicle with the NATO slave start cable.

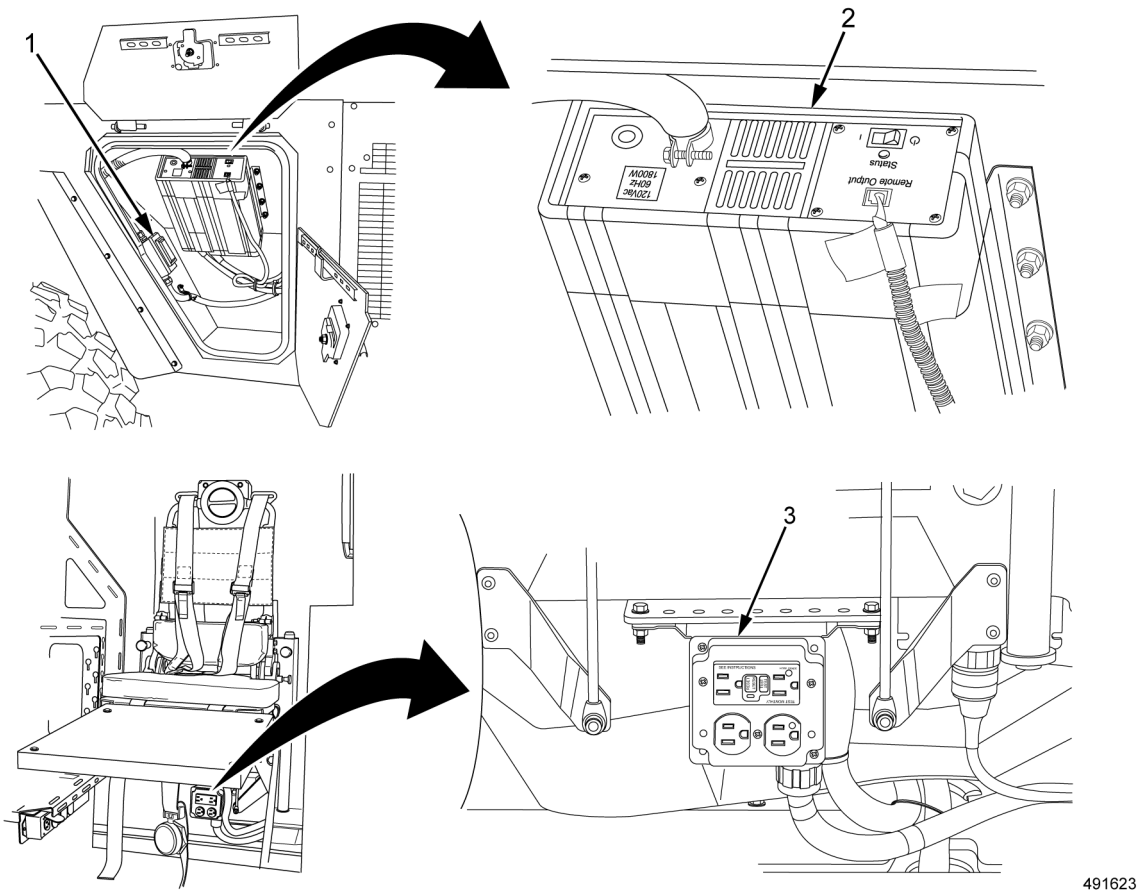


Figure 24. 110V Power Inverter and Outlets.

The power inverter (Figure 24, Item 2) converts battery power into 110V power for auxiliary equipment, which can be plugged into the auxiliary outlet (Figure 24, Item 1) or passenger compartment auxiliary outlet (Figure 24, Item 3).

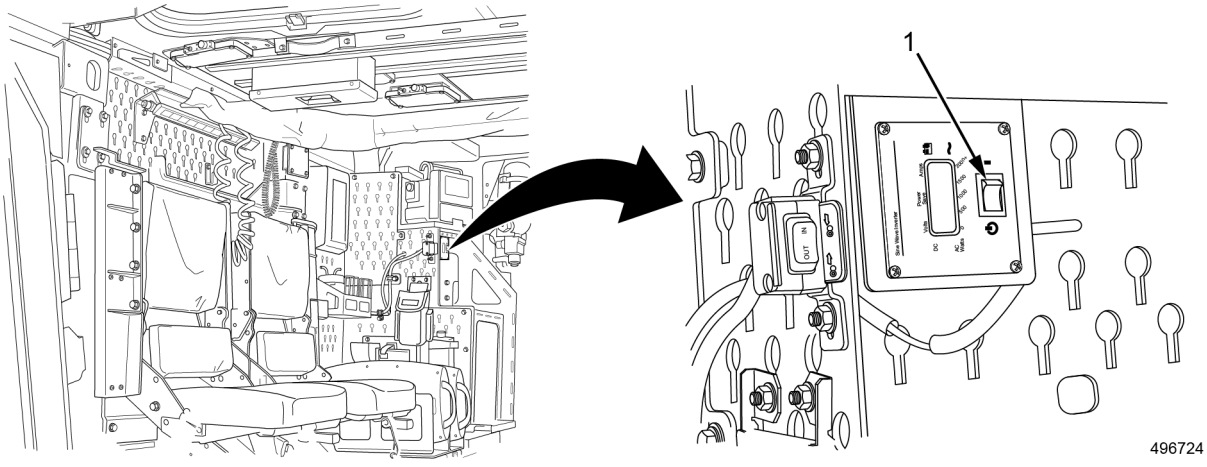


Figure 25. 110V Power Inverter Remote Switch.

Remote switch (Figure 25, Item 1) in the passenger compartment turns the power inverter ON and OFF.

FUSE AND CIRCUIT BREAKER PANELS

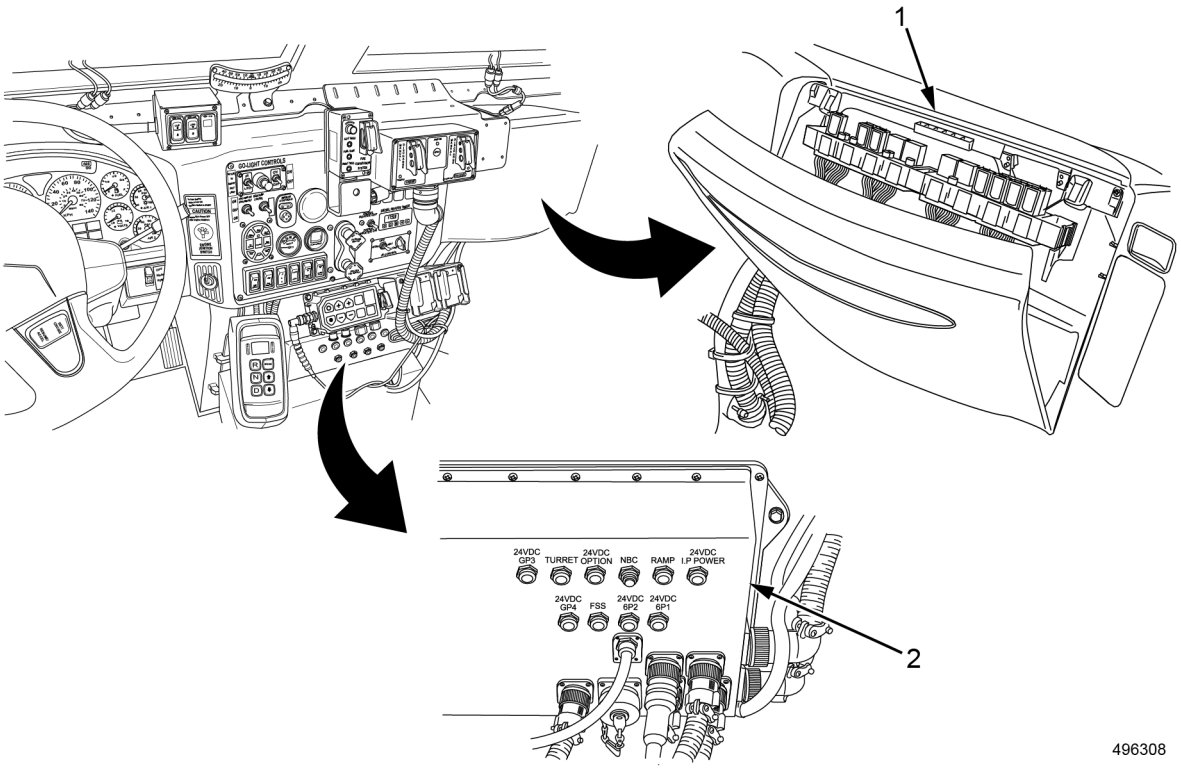


Figure 26. Fuse and Circuit Breaker Panels.

The fuse and circuit breaker panel (Figure 26, Item 1) and Power Distribution Module (PDM) (Figure 26, Item 2) is for equipment and electrical system components. Circuit breakers can be reset, if necessary.

EXTERIOR LIGHTING SYSTEMS

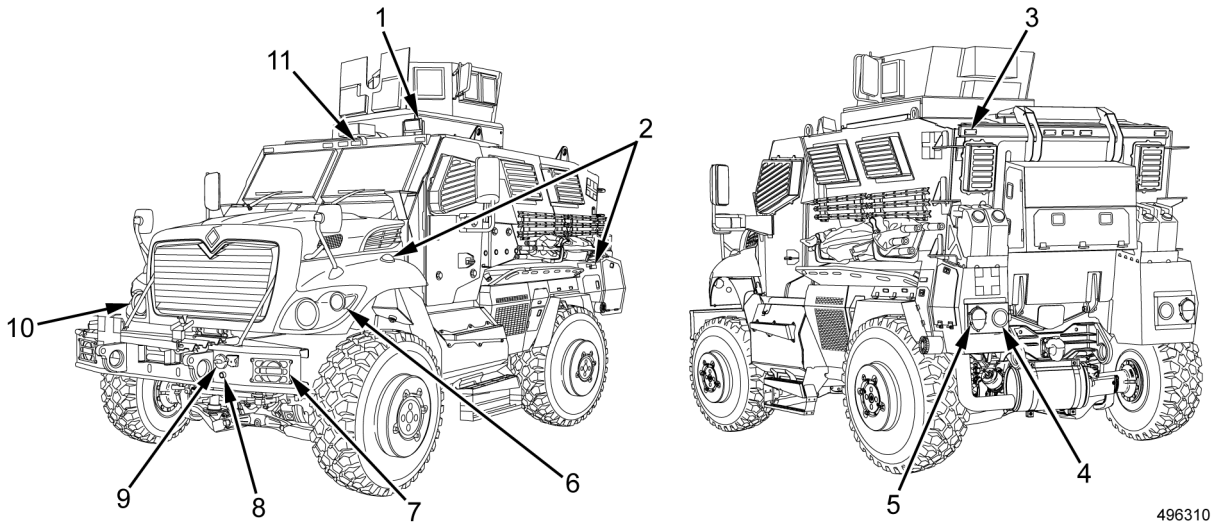


Figure 27. Exterior Lighting Systems.

Front and rear lighting consists of Light Emitting Diodes (LED) and incandescent/halogen bulbs controlled with the Master Vehicle Light Switch (MVLS) located on the Instrument Panel (IP).

The exterior lighting system consists of the following major components: front clearance lamps (ORANGE) (Figure 27, Item 11), spotlight (roof) (Figure 27, Item 1), side marker lamps (RED rear and ORANGE front) (Figure 27, Item 2), front park/turn signal lamps (Figure 27, Item 6), front head lamps (Figure 27, Item 10), front infrared (IR) lamp (Figure 27, Item 8), front blackout drive lamp (Figure 27, Item 9), backup lamps (Figure 27, Item 4), rear blackout turn signal, brake, and park lamps (Figure 27, Item 5), front blackout park and turn signal lamp (Figure 27, Item 7), and red rear clearance lamps (Figure 27, Item 3). IR and blackout lights are used for night vision viewing.

Spotlight.

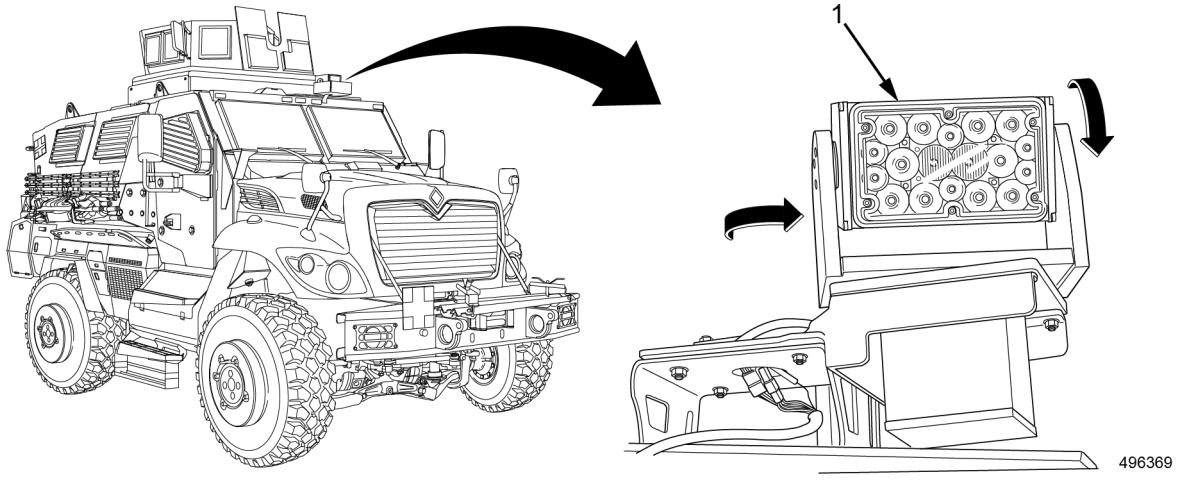


Figure 28. Spotlight.

A 24V, LED spotlight (Figure 28, Item 1) is controlled from inside vehicle to rotate 360 degrees horizontally and 135 degrees vertically while active. Spotlight also contains IR LEDs for blackout operation.

INTERIOR LIGHTING

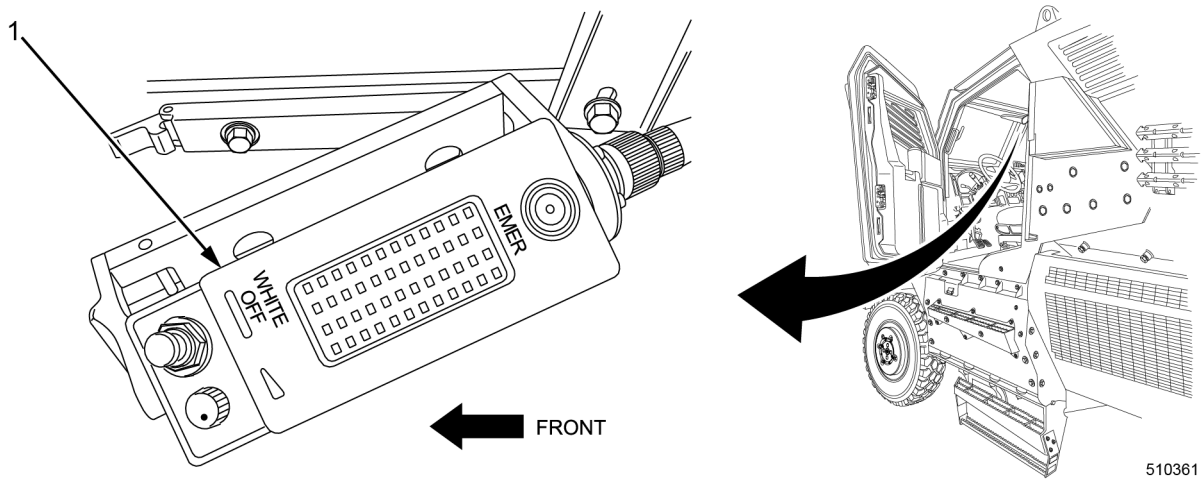


Figure 29. Front Cab Light.

NOTE

There is one front cab light in the driver and commander area.

There are six passenger dome lights, three task bar lights, and two remote task lights.

The front cab light (Figure 29, Item 1) is manually operated and can be dimmed for night time operation.

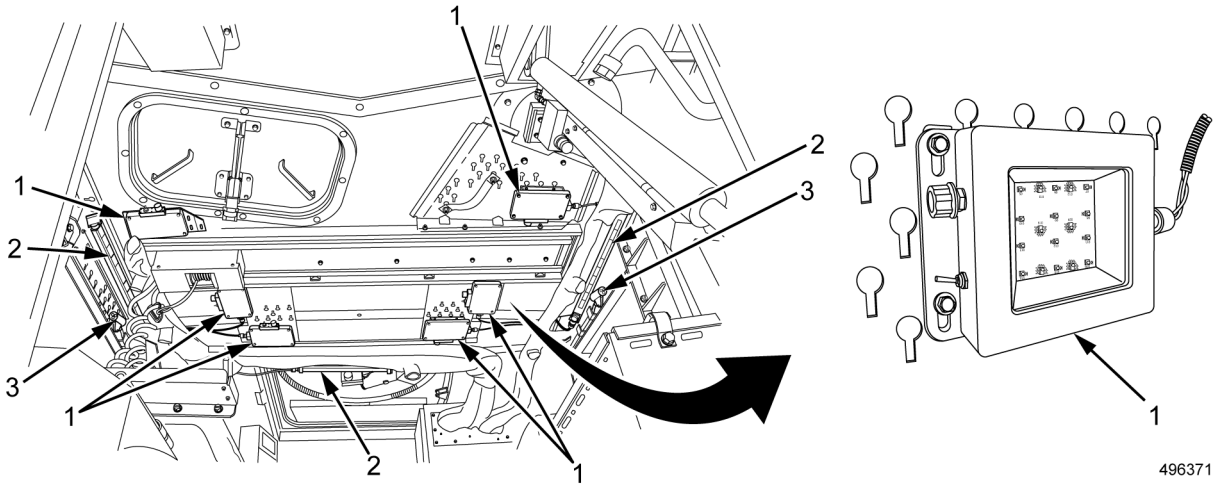


Figure 30. Rear Passenger Lighting.

The rear lighting is provided by six passenger LED lights (Figure 30, Item 1), three task bar lights (Figure 30, Item 2), and two remote task lights (Figure 30, Item 3) that can be controlled together or independently. All lights change color for emergency and can be dimmed for night time operation.

PNEUMATIC (AIR) SYSTEM

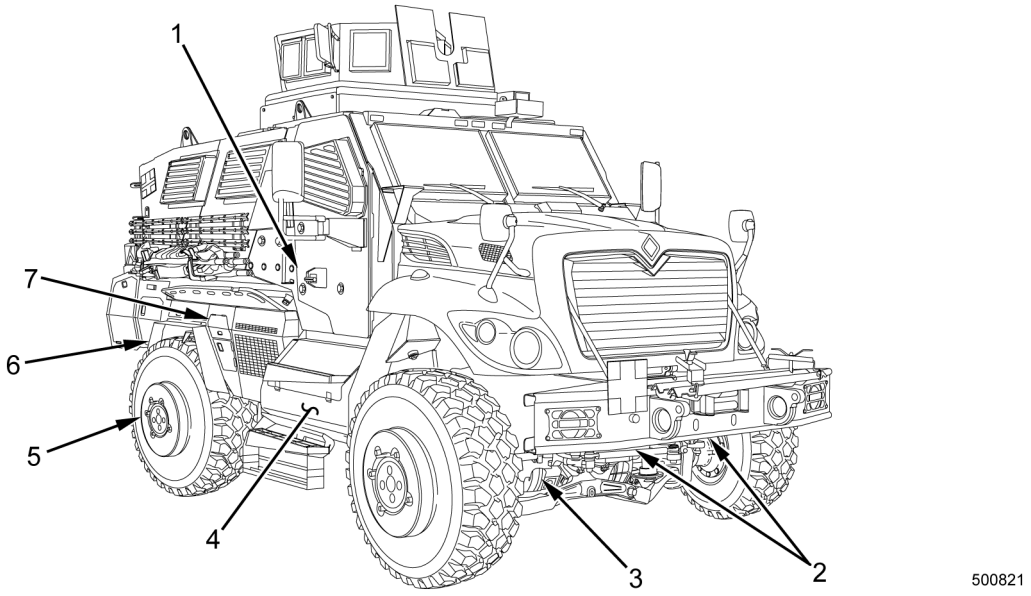


Figure 31. Pneumatic (Air) System.

The pneumatic (air) system consists of the following major components: air assist doors (Figure 31, Item 1), front gladhands (Figure 31, Item 2), air brakes (Figure 31, Item 3), CTIS (Figure 31, Item 5), compressed air storage tanks (Figure 31, Item 4), rear gladhands (Figure 31, Item 6), and air compressor fitting (Figure 31, Item 7).

Air Assist Doors.

NOTE

Door trim panel removed from figure for clarity.

Driver side air assist door shown; commander side similar.

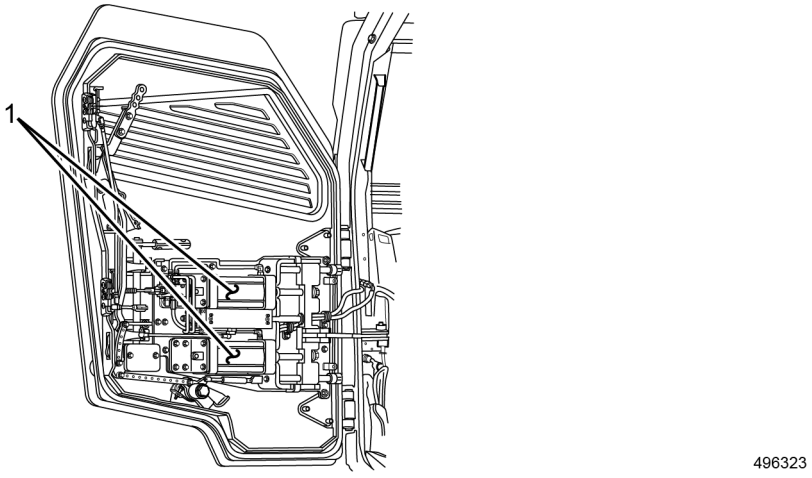


Figure 32. Driver Pneumatic Cabin Door.

Cabin doors have a pneumatically assisted open-and-close feature. Actuators (Figure 32, Item 1) are hidden behind door trim panel.

Air Brakes.

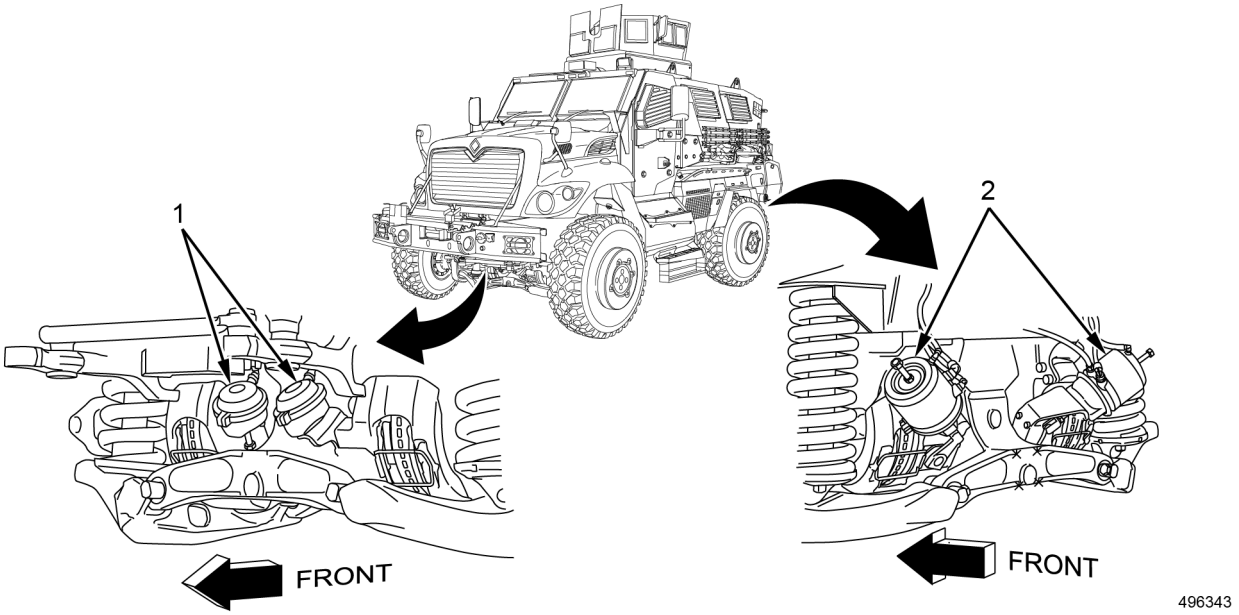


Figure 33. Front and Rear Air Brake Chambers.

Vehicle has front air brake chambers (Figure 33, Item 1) and rear air brake chambers (Figure 33, Item 2). Rear air brake chambers are easily accessible for caging and uncaging rear brakes.

Central Tire Inflation System (CTIS).

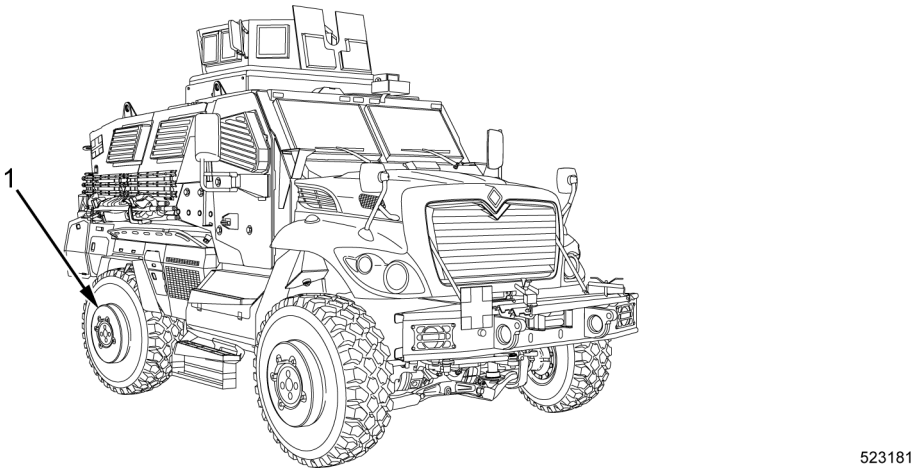


Figure 34. CTIS.

Vehicle is equipped with CTIS (Figure 34, Item 1). CTIS allows the driver to control tire pressure on all tires. The system allows the driver to select one of four terrain modes and three load modes on the digital display monitor. CTIS has the ability to detect maximum vehicle speed allowed for each mode. If the vehicle exceeds the maximum speed for the selected tire pressure, the OVERSPEED indicator on the DDM will warn the driver. If the average speed is exceeded for more than 1 minute, the system will automatically adjust the tire pressure.

CTIS (Figure 34, Item 1) allows tire pressure increase due to heat buildup during vehicle use. It will not automatically deflate these pressure buildups.

Compressed Air Storage Tanks.

NOTE

Armor removed from figure for clarity.

Vehicle has self-draining air tanks. Under normal operating conditions, air tanks do not need to be drained.

Primary tank is not shown, but is located behind secondary tank.

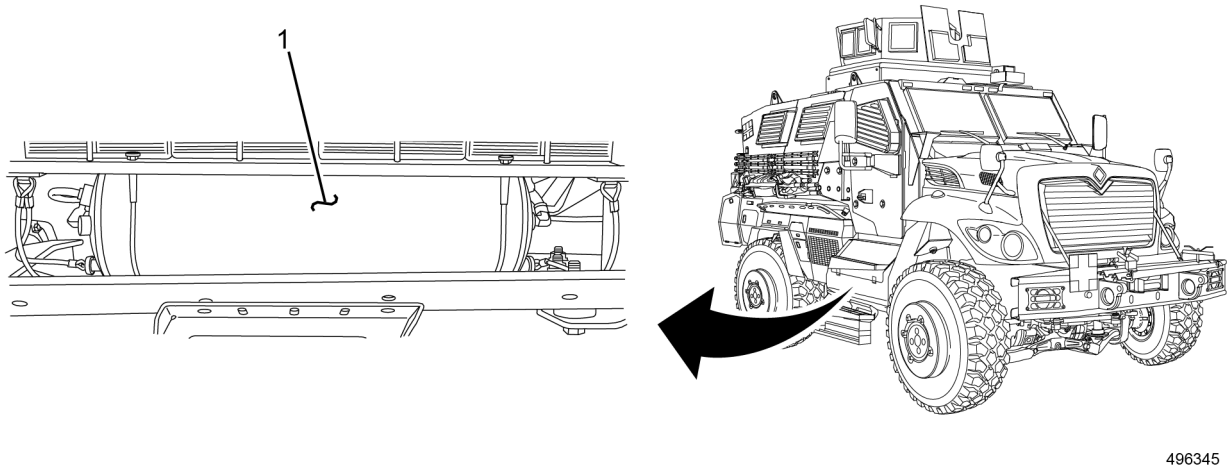


Figure 35. Compressed Air Storage Tank.

Compressed air for the pneumatic system is stowed in two air tanks (Figure 35, Item 1). Air tanks are mounted behind battery box armor and below the batteries.

Front and Rear Gladhands.

NOTE

Rear gladhands shown; front gladhands similar.

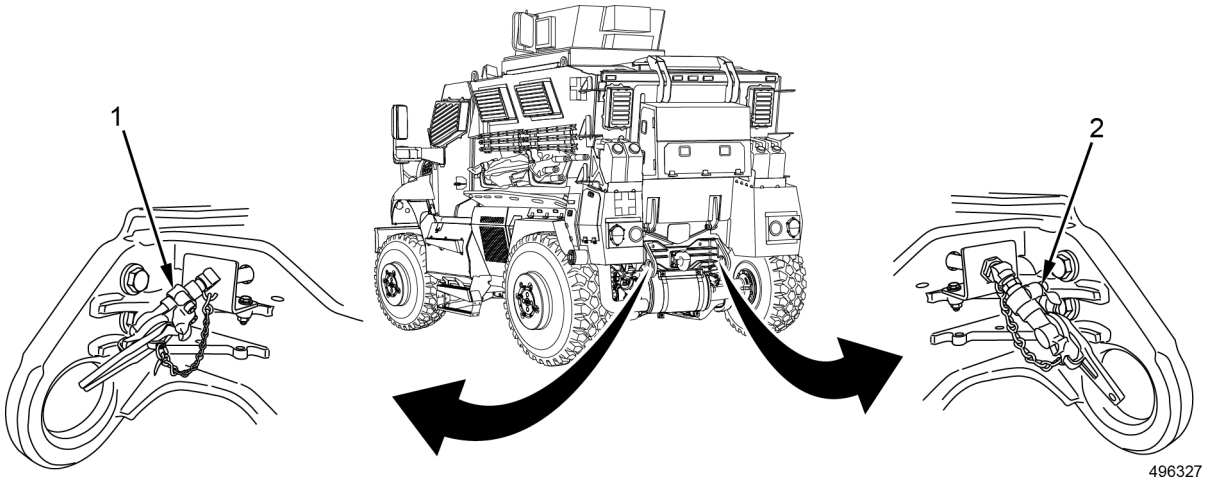


Figure 36. Rear Gladhands.

The emergency gladhand (Figure 36, Item 1) and service gladhand (Figure 36, Item 2) are easily accessible for towing.

Air Compressor Fitting.

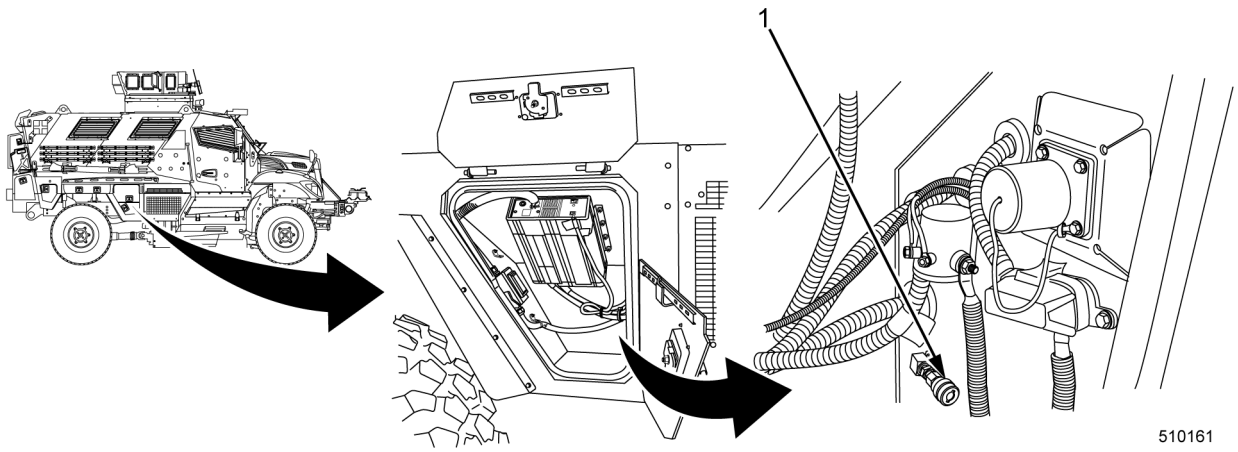


Figure 37. Air Compressor Fitting.

The air system provides Field Level Maintenance a means of inflating the tires or operating other air-powered equipment by using the air compressor fitting (Figure 37, Item 1).

ANTILOCK BRAKING SYSTEM

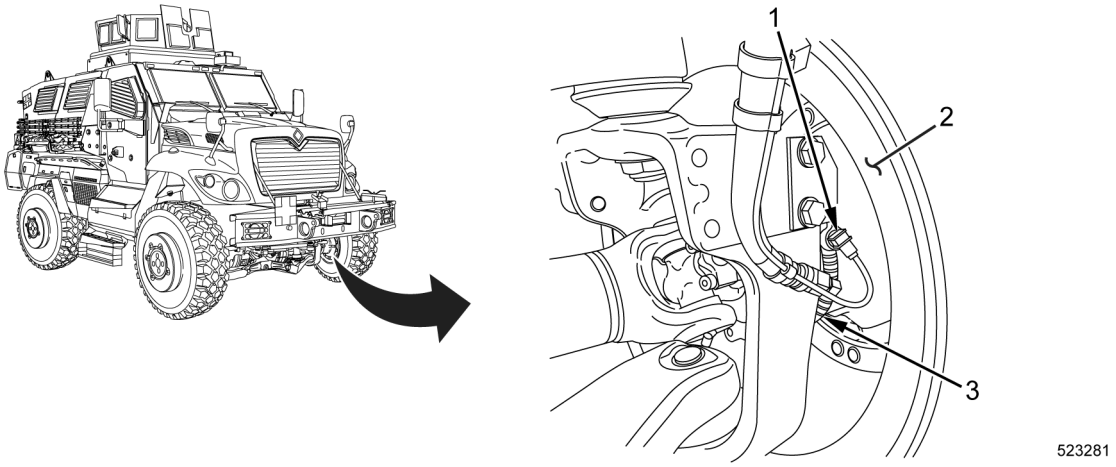


Figure 38. ABS Wheel Speed Sensor and Tone Ring.

NOTE

Driver side front wheel shown; other wheels similar.

The ABS system uses wheel speed sensors (Figure 38, Item 1), ABS modulator valves, and an Electronic Control Unit (ECU) to control all vehicle wheels (Figure 38, Item 2). By monitoring individual wheel turning motion with a tone ring (Figure 38, Item 3) during braking and adjusting or pulsing the brake pressure at each wheel, the ABS is able to minimize slip between the tire and the road surface. When excessive wheel slip or wheel lockup is detected, the ABS controller will activate the pressure modulator valves to simulate a driver pumping the brakes. However, the ABS is able to pump the brakes on individual wheels independently, and with greater speed and accuracy than a driver.

LIFT EYES, TIE-DOWNS, BODY, AND CHASSIS SYSTEM

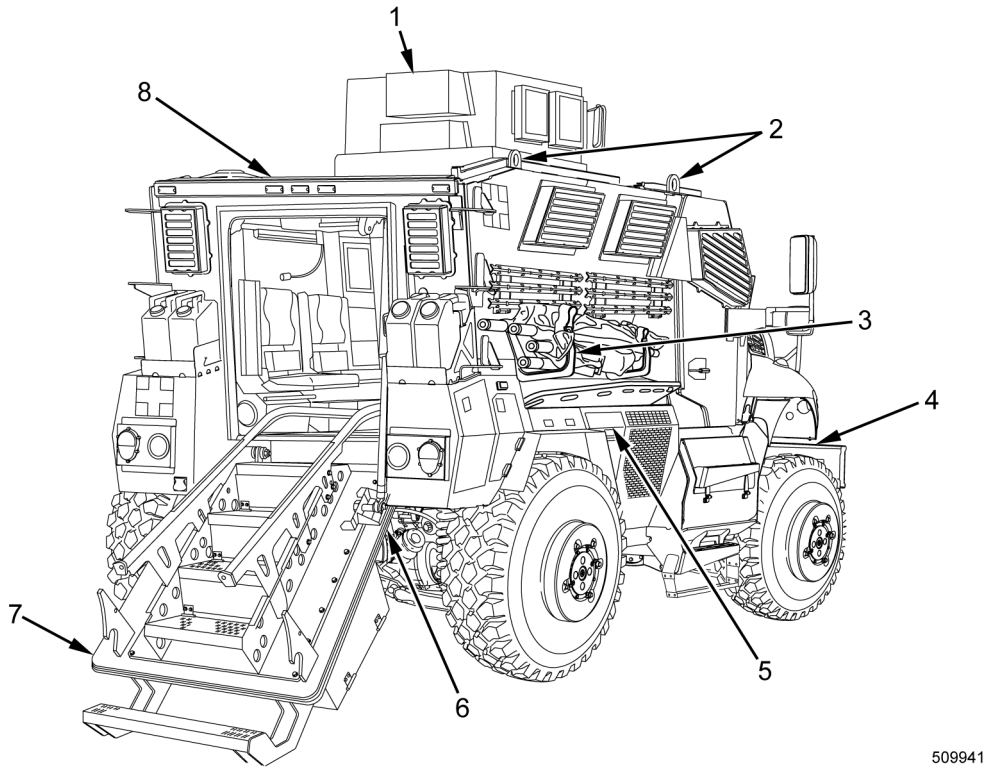


Figure 39. Lift Eyes, Tie-Downs, Body, and Chassis System - Exterior.

The body and chassis exterior systems consist of the following major components: winch (Figure 39, Item 4), fuel fired heater (Figure 39, Item 5), tie-downs (Figure 39, Item 3), lift eyes (Figure 39, Item 2), towing connections (Figure 39, Item 6), rear door/ramp (Figure 39, Item 7), emergency hatch (Figure 39, Item 8), and OGPK ammunition storage (Figure 39, Item 1). Lift eyes and tie-downs are on both sides of the vehicle.

Winch.

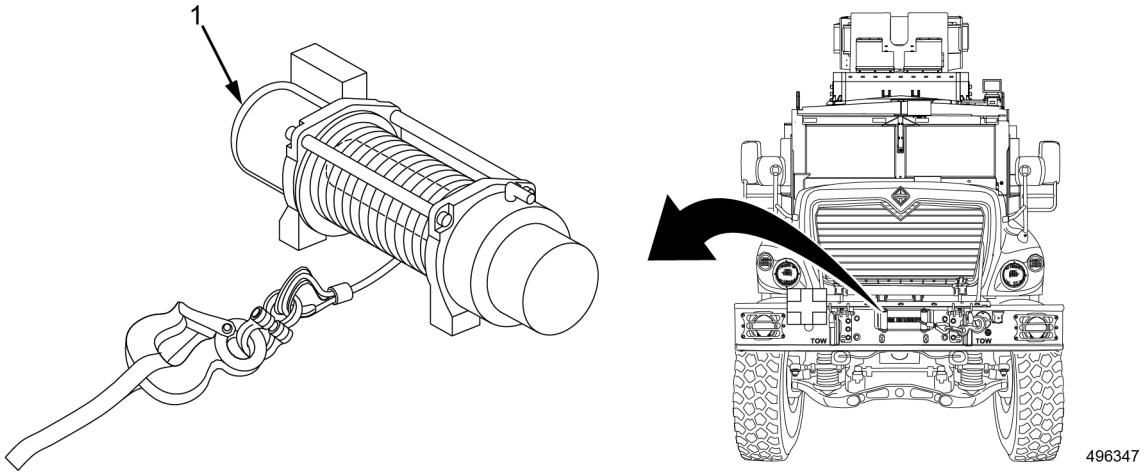


Figure 40. Winch.

A 24V remote-controlled electric winch (Figure 40, Item 1) with metal cable and hook can be used to pull a maximum load of 18,000 lb. (8165 kg). The winch is equipped with an Overload Interrupt (OLI) device. The OLI device guards against overheating the winch motor, gear train, and wire rope. When the load exceeds maximum capacity, the OLI device trips and temporarily disables winching to prevent damage to equipment.

Fuel Fired Heater.

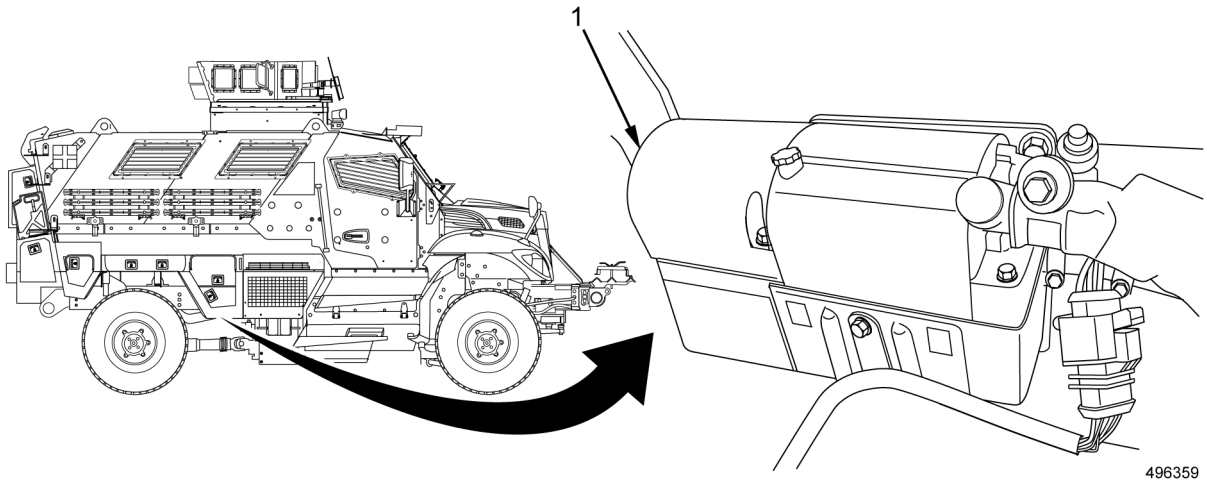


Figure 41. Fuel Fired Heater.

A fuel fired heater (Figure 41, Item 1) heats engine coolant and operates independently of the engine to provide cold weather starting. It can be operated from the cabin by a switch or a pre-set timer, regulating coolant temperature between 149°F (65°C) and 176°F (80°C).

Towing Connections.

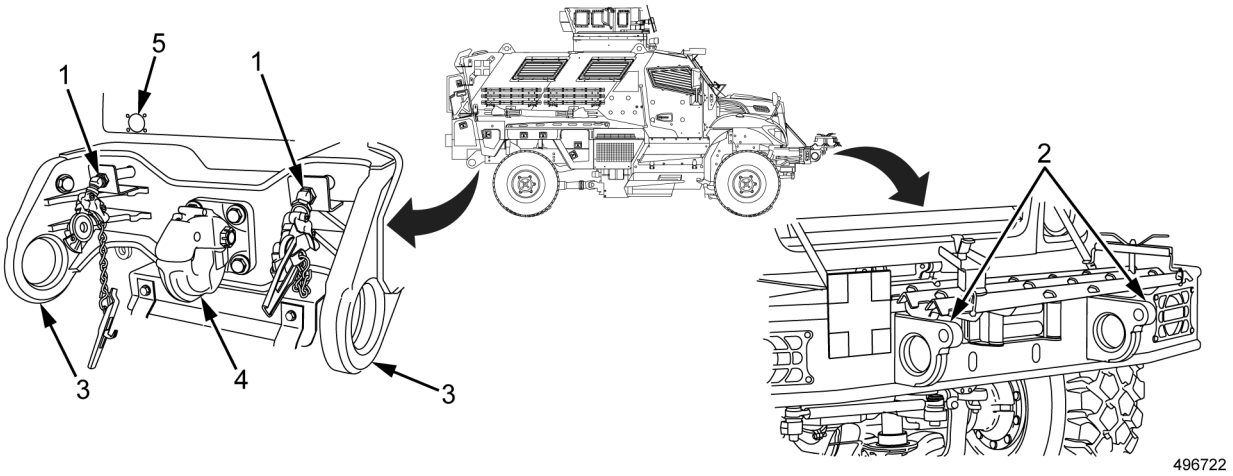


Figure 42. Towing Connections.

Vehicle is equipped with two front tow hooks (Figure 42, Item 2), rear tie-down fixtures (Figure 42, Item 3), gladhands (Figure 42, Item 1), tow pintle (Figure 42, Item 4), and trailer connections (Figure 42, Item 5).

Rear Door/Ramp.

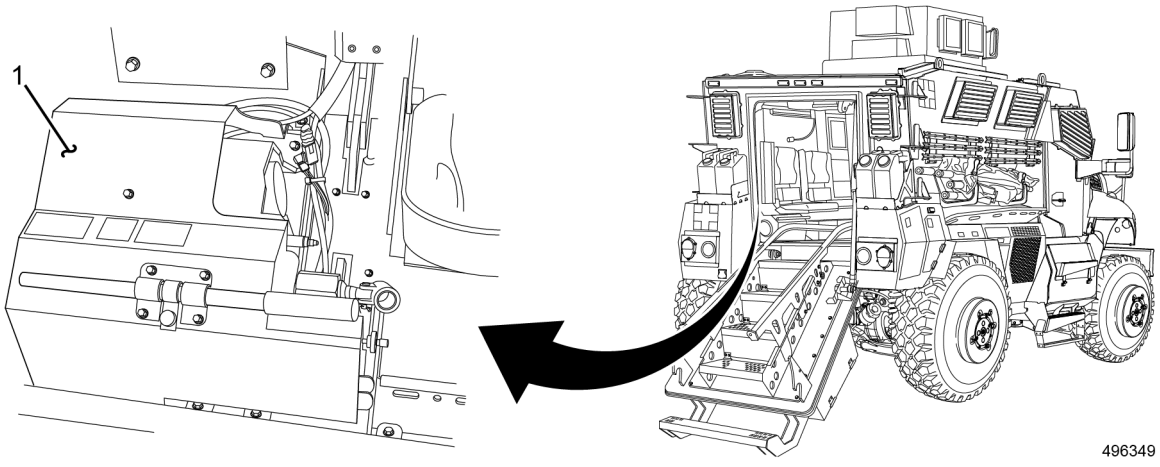


Figure 43. Rear Door/Ramp Pump Assembly.

The rear door/ramp is operated by a hydraulic system (Figure 43, Item 1) from both the driver seat and inside the cabin at the rear of the vehicle. In the event of a power loss, the rear door/ramp can be operated manually from the cabin area.

Emergency Hatch.

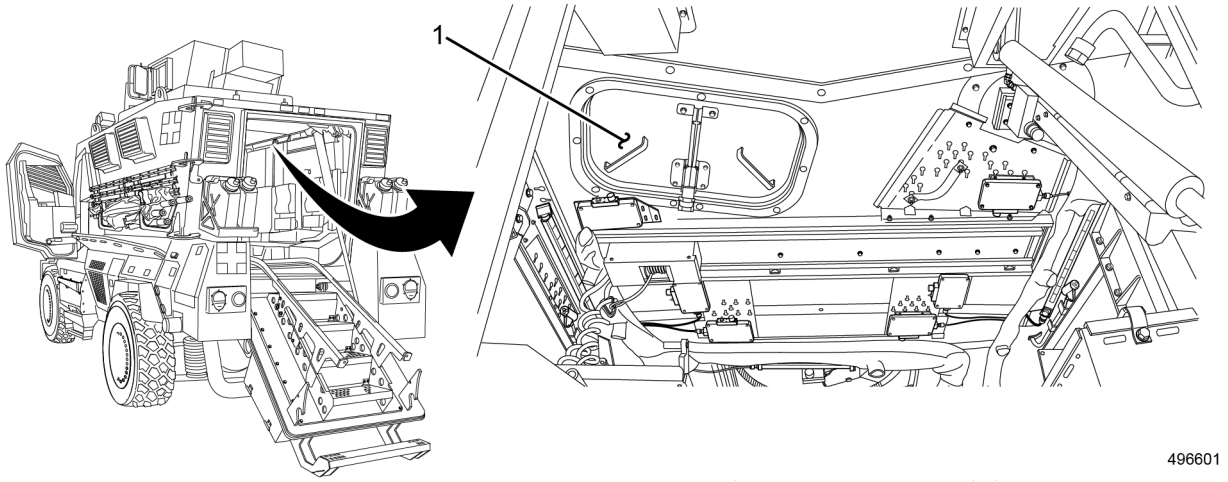


Figure 44. Emergency Hatch.

The emergency hatch (Figure 44, Item 1) at the rear of the cabin ceiling can be used to exit the vehicle if other exits are not available.

BACKUP ALARM

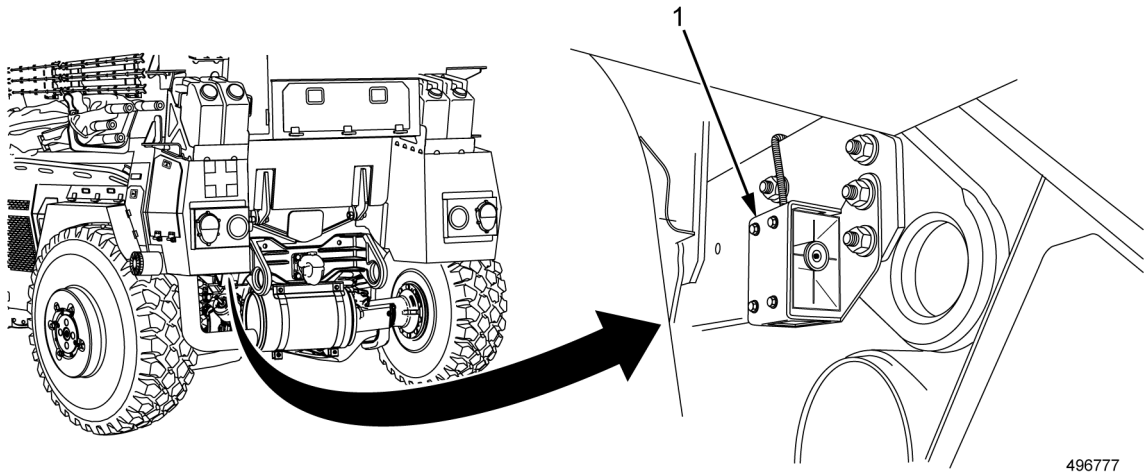


Figure 45. Backup Alarm.

Vehicle is equipped with an audible backup alarm (Figure 45, Item 1) that sounds when transmission is placed in reverse. The alarm will only sound when service drive lights are in use.

BODY AND CHASSIS INTERIOR

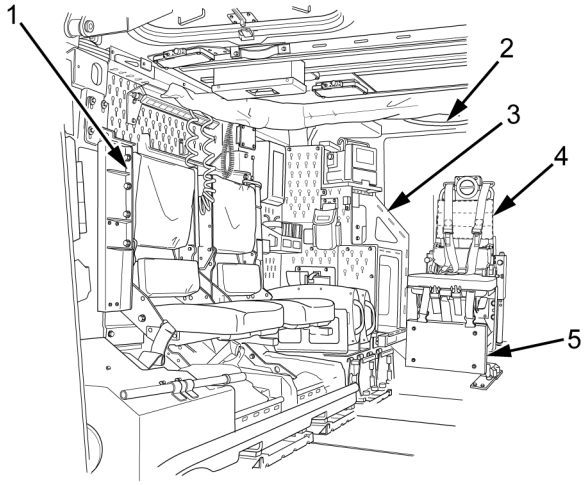


Figure 46. Body and Chassis Interior.

The body and chassis interior system consists of the following major components: communications rack (Figure 46, Item 3), sliding and gunner hatches (Figure 46, Item 2), passenger seats (Figure 46, Item 1), medic seat (Figure 46, Item 4), and gunner platform (Figure 46, Item 5).

Communications Rack.

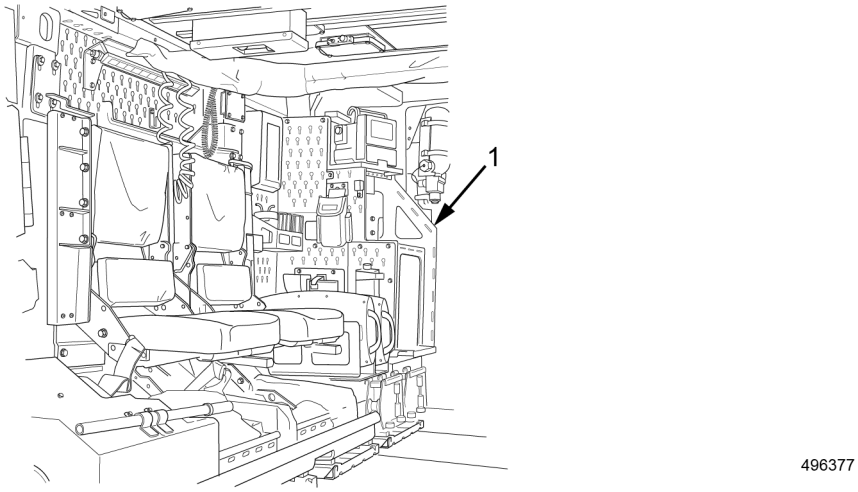


Figure 47. Communications Rack.

Communications equipment can be safely secured to the metal communications rack (Figure 47, Item 1).

Sliding and Gunner Hatches.

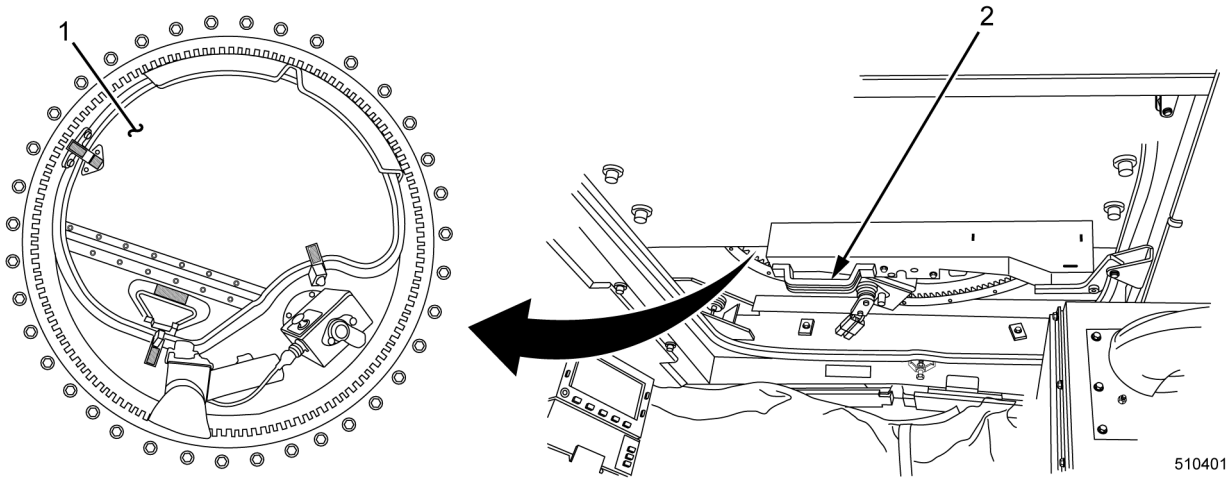


Figure 48. Sliding and Gunner Hatches.

Open sliding hatch (Figure 48, Item 2) to access gunner hatch (Figure 48, Item 1) which provides access to the OGPK.

Passenger Seats.

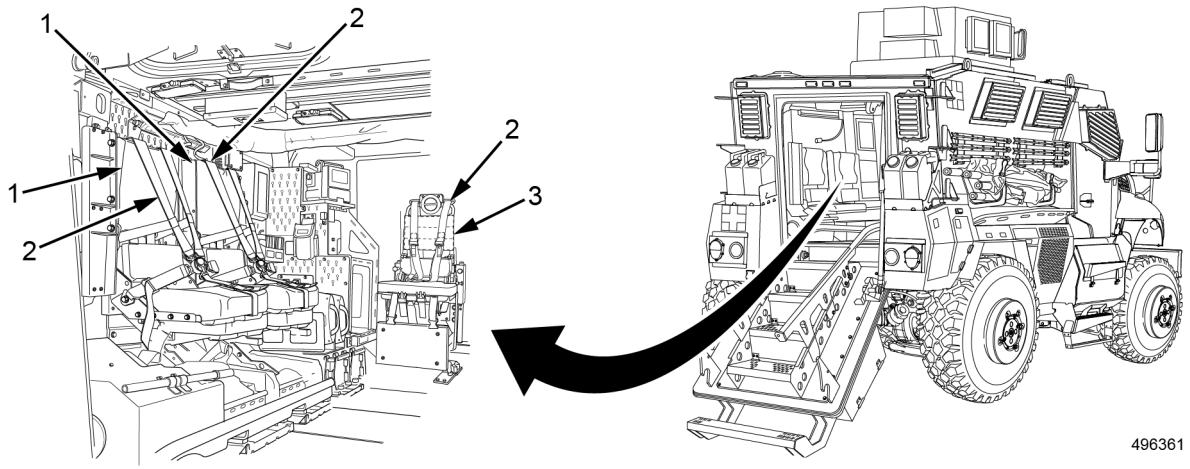


Figure 49. Passenger and Medic Seat Belts.

All passenger seats (Figure 49, Item 1) and medic seat (Figure 49, Item 3) have a five-point seat belt system (Figure 49, Item 2). Passenger seats have a fold-up seat back (Figure 49, Item 1). All seats have a built-in mitigation system designed and tested against severe blast loads. For seat belt operation, refer to WP 0009 Operation Under Usual Conditions - Seat Belt Operation.

REAR PASSENGER FLOOR RIBS

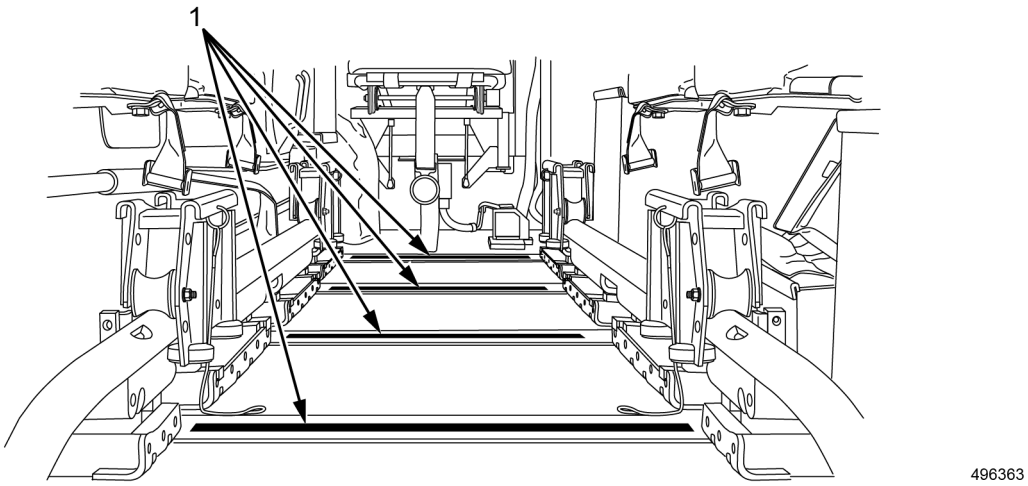


Figure 50. Passenger Floor Ribs.

The passenger compartment floor has four floor ribs (Figure 50, Item 1) where feet should not be placed. These areas are clearly marked NO FEET.

LITTER AND STRAPS

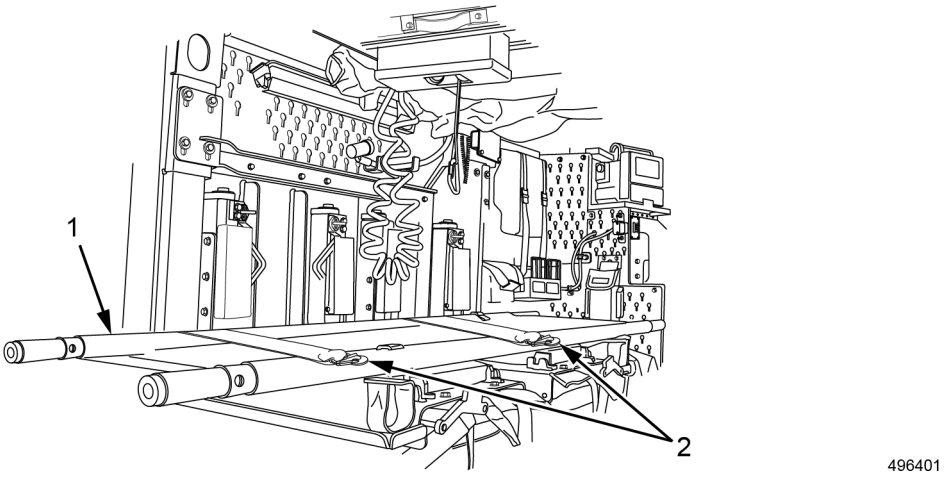


Figure 51. Litter and Straps.

Litters (Figure 51, Item 1) are use for transport of personnel. Two straps (Figure 51, Item 2) hold down personnel and litter when being transported.

IGRS

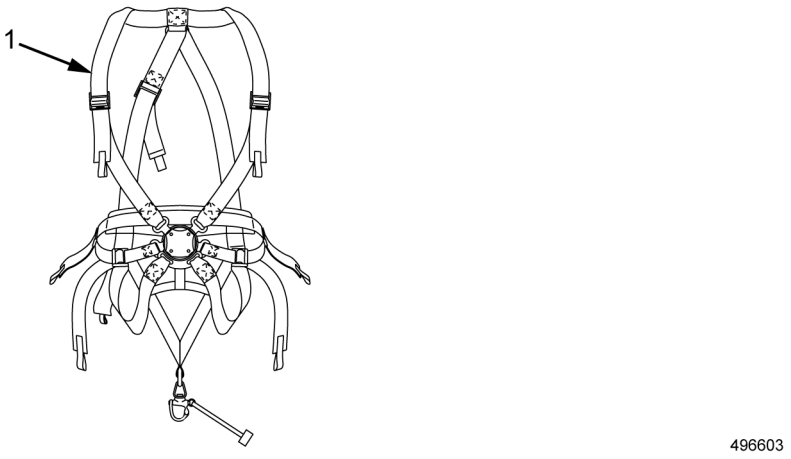


Figure 52. IGRS.

IGRS (Figure 52, Item 1) is part of the occupant protection system that includes a harness with anchor strap and rigidly mounted retractor (not shown).

BEATS

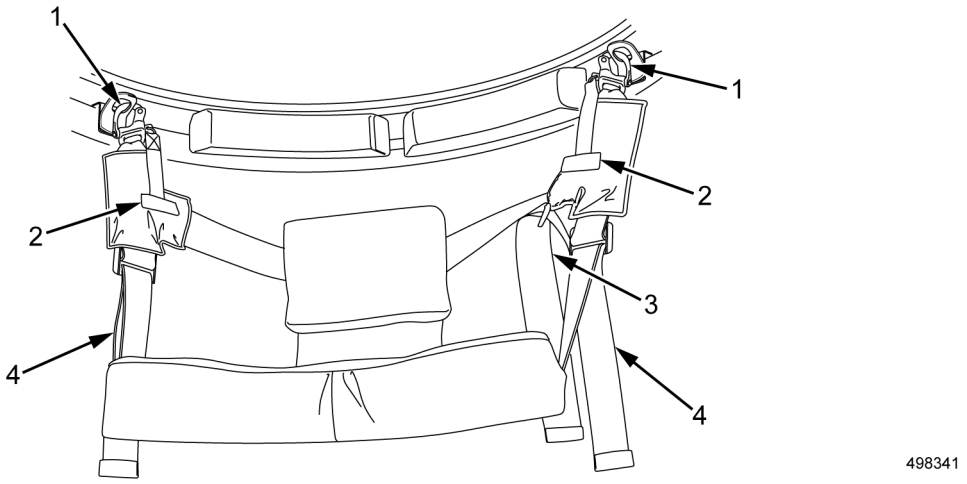


Figure 53. BEATS.

BEATS provides comfort and support to gunner seated in turret to reduce risk of injury or death during a blast event. It is used in conjunction with IGRS to improve force protection. BEATS has two vertical adjustable straps (Figure 53, Item 4), one forward/rearward adjustable straps (Figure 53, Item 3) that are used to adjust BEATS to accommodate gunner. In case of emergency there are two pull tabs (Figure 53, Item 2) which open the two emergency release shackles (Figure 53, Item 1).

DRIVER AND COMMANDER SEATS

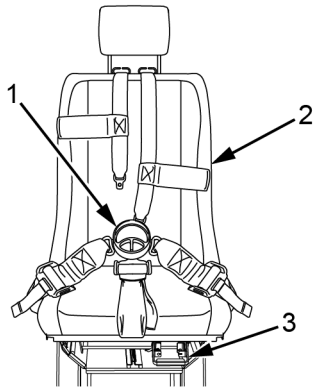


Figure 54. Driver and Commander Seats.

Driver and commander seats (Figure 54, Item 2) have a five-point seat belt system (Figure 54, Item 1), forward and backward seat adjustments (Figure 54, Item 3), and built-in axial mitigation system which is designed and tested against severe blast loads.

AFES AND FSS

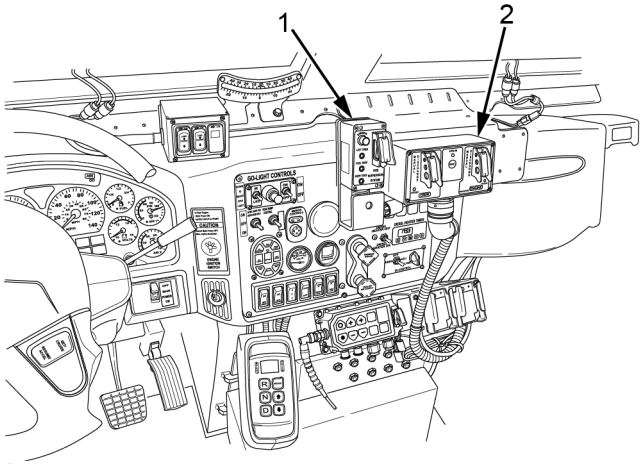


Figure 55. AFES and FSS.

The AFES major components consist of the AFES control panel (Figure 55, Item 2), AFES sensors, passenger compartment AFES cylinders and nozzles, and engine compartment nozzles. The FSS major components consist of the FSS control panel (Figure 55, Item 1), extinguisher cylinders, fuel tank nozzles, and tire nozzles.

AFES and FSS Control Panels.

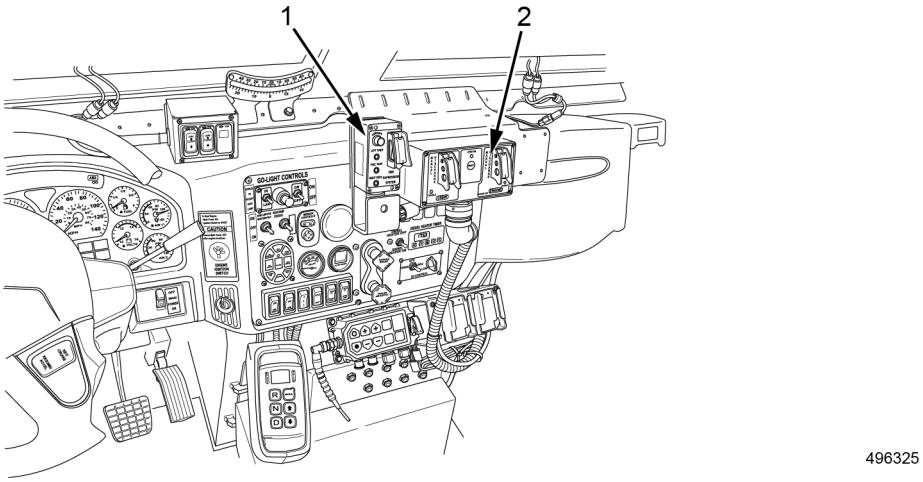


Figure 56. AFES and FSS Control Panels.

The AFES control panel (Figure 56, Item 2) is used to monitor the status of the system and manually activate the AFES extinguishers to extinguish fires in the cabin and engine if system fails to operate automatically. The FSS control panel (Figure 56, Item 1) is used to monitor the status of the system and manually activate the FSS extinguishers for the tires and fuel tank areas.

AFES Sensors.

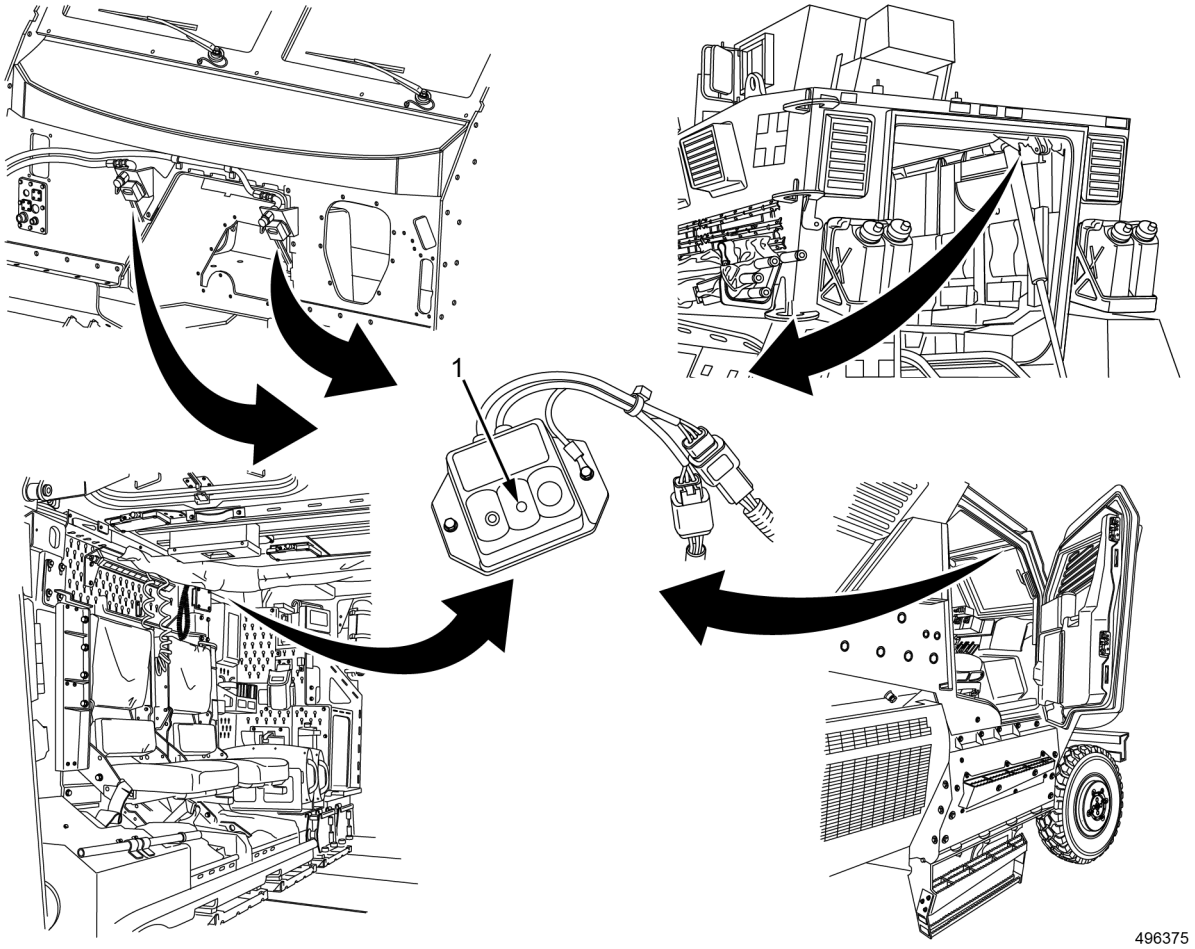


Figure 57. AFES Sensors.

The cabin and engine AFES cylinders are automatically triggered by sensors (Figure 57, Item 1).

If the AFES sensors fails to detect an event, the ENGINE and CABIN switch on the AFES control panel can be used to manually activate the extinguishers.

The tire and fuel tank FSS cylinders are operated manually only, and activated by using the FSS switch on the FSS control panel.

Passenger Compartment AFES Cylinders and FSS Cylinders.

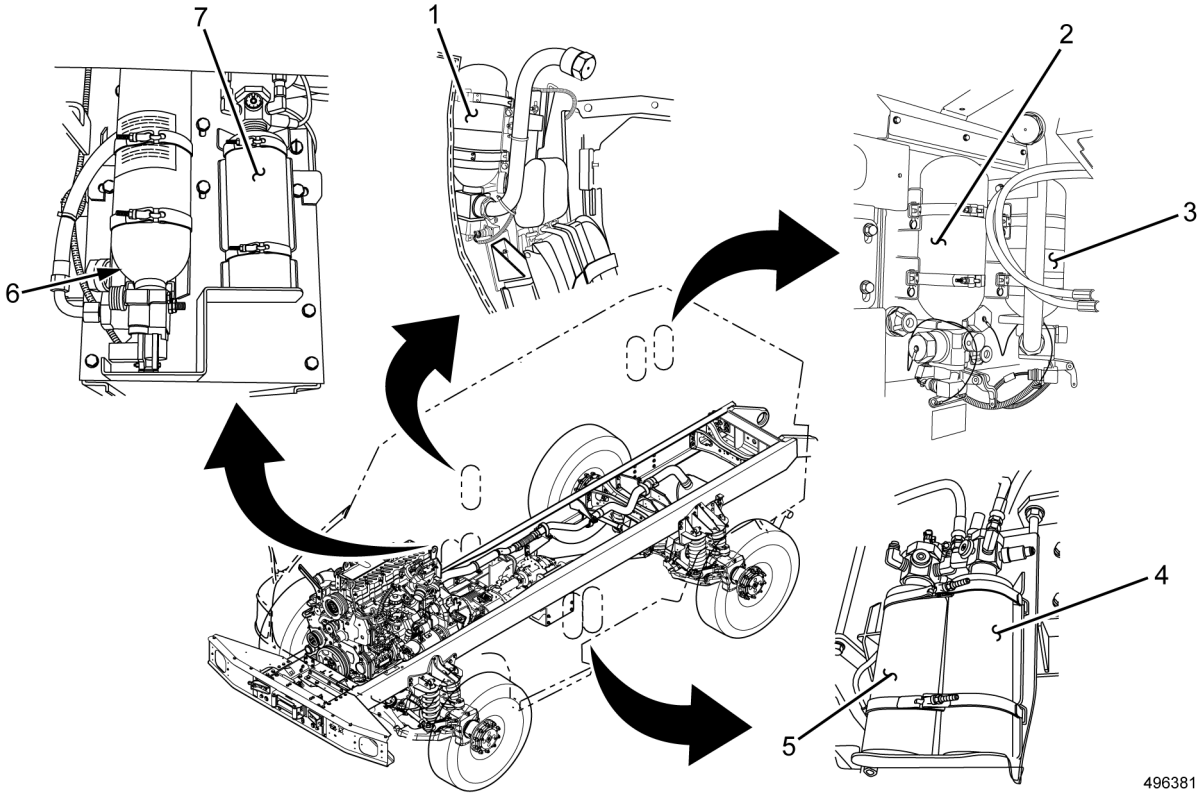


Figure 58. AFES and FSS Cylinders.

There are different AFES and FSS cylinders for different areas: HFC-227 (heptafluoropropane, sodium bicarbonate, and amorphous silica) for cabin AFES (Figure 58, Item 1, 2, and 3), ANSUL Plus-Fifty dry chemical (sodium amorphous silica) for engine AFES (Figure 58, Item 6). Dry chemical agent is used for tires (Figure 58, Item 4 and 7), and fuel tank (Figure 58, Item 5) FSS.

LSS/HVAC

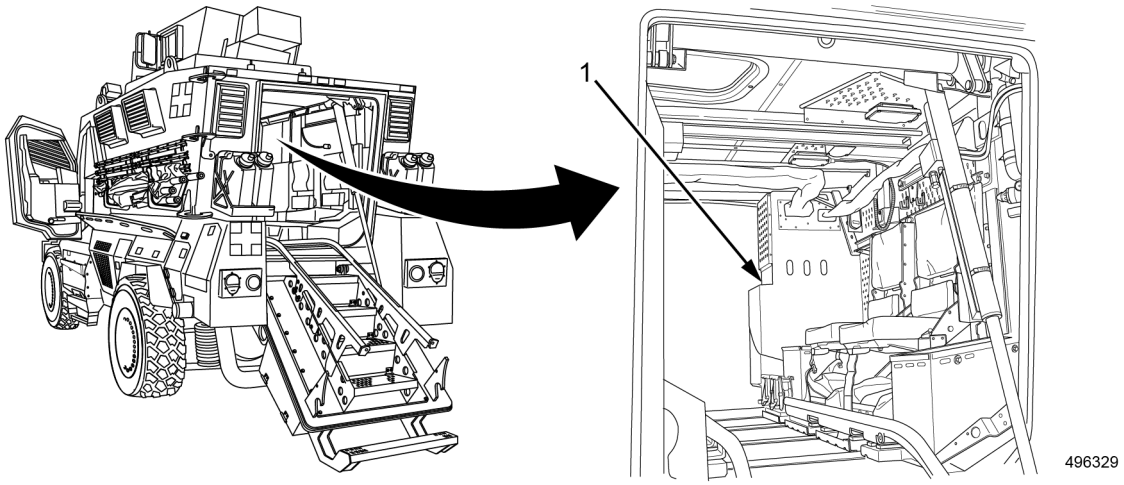


Figure 59. LSS/HVAC.

The LSS/HVAC (Figure 59, Item 1) regulates fresh and recirculated air within the cabin. It provides protection from extreme hot or cold outside temperatures. Fresh air is received into the vehicle cabin through an inlet on the vehicle roof. The pretreated air then moves through an evaporator and a heater, where fresh air is mixed with recycled air. A blower moves the treated air into the cabin.

LOCATION AND MAJOR COMPONENT IDENTIFICATION PLATES

Refer to WP 0073, Stowage and Decal/Data Plate Guide.

EQUIPMENT DATA

Refer to the following tables for specific equipment data.

Table 1. Vehicle Weight.

VEHICLE CATEGORY	DESCRIPTION	SPECIFICATION
M1266A1	Curb Weight (w/o OGPK)	43,611 lb (19,782 kg)
M1266A1	Curb Weight (w/ OGPK)	44,730 lb (20,289 kg)
M1266A1	Curb Weight (w/OGPK)(w/ RPG)	46,150 lb (20,952 kg)
M1266A1	Gross Vehicle Weight (w/o OGPK)	51,881 lb (23,533 kg)
M1266A1	Gross Vehicle Weight (w/ OGPK)	53,000 lb (24,040 kg)
M1266A1	Gross Vehicle Weight (w/ OGPK) (w/ RPG)	54,420 lb (24,707 kg)
M1266A1	Gross Vehicle Weight Front Axle	24,000 lb (10,886 kg)
M1266A1	Gross Vehicle Weight Rear Axle	29,000 lb (13,154 kg)

Table 2. Vehicle Dimensions.

DESCRIPTION	SPECIFICATION
M1266A1 (w/o OGPK) (w/o RPG)	Length: 267 in. (6,789 mm) Height: 143 in. (3,632 mm)
M1266A1 (w/ OGPK) (w/o RPG)	Length: 267 in. (6,789 mm) Height: 158 in. (4,013 mm)
M1266A1 (w/ OGPK) (w/ RPG)	Length: 289 in. (7,341 mm) Height: 158 in. (4,013 mm)
M1266A1 (Mirrors folded in) (w/o RPG)	Width: 105 in. (2,667 mm)
M1266A1 (Mirrors extended) (w/o RPG)	Width: 129 in. (3,285 mm)
M1266A1 (Mirrors extended) (w/ RPG)	Width: 129 in. (3,285 mm)
M1266A1 (Outer tire vehicle width)	Width: 104 in. (2,642 mm)
M1266A1 (Center of tire vehicle width)	Width: 86 in. (2,184 mm)
M1266A1 (Side view center of wheel hub front to center of rear wheel hub)	Width: 155 in. (3,937 mm)
M1266A1 (Top of front bumper to ground)	Height: 49 in. (1,247 mm)
M1266A1 (Belly pan to ground)	Height: 21 in. (520 mm)
M1266A1 (Transmission case armor to ground)	Height: 15 in. (381 mm)

Table 3. Dimensions.

GROUND CLEARANCE	SPECIFICATION
Front Lower Control Arm	12.1 in. (30.7 cm)
Rear Lower Control Arm	12.0 in. (30.5 cm)

Table 4. Performance.

ITEM	SPECIFICATION
Power to Weight Ratio (gross wt)	15 hp/ton
Fuel Consumption (moving)	4.4 mpg (53 L or 100 km)
Angle of Approach	47 degrees
Angle of Departure	46 degrees
Vertical Step	18 in. (45.7 cm)
Maximum Grade (climb)	60%
Maximum Grade (descent)	60%
Maximum Grade (side)	30%
Ford Depth	36 in. (91 cm)

ITEM	SPECIFICATION
Turning Radius, Curb to Curb	54 feet (16.4 m)
Top Speed	65 mph (105 kph)
Vehicle Operating Temperature Range	-25° to +125°F (-32° to +52°C)

Table 5. Capacities.

ITEM	SPECIFICATION
Engine Oil with Filter	28 qt (26.5 L) (OE/HDO-15-40)
Cooling System	7.3 gal (27.6 L) (CID A-A-52624A; A (60% ethylene glycol); C (50/50 mix ethylene glycol and water.)
Coolant Overflow Tank	4.8 qt (4.5 L)
Coolant Deaeration Tank	5.9 qt (5.6 L)
Transmission with Filter – Dry	29 qt (27.4 L) (OE/HDO-10)
Transmission with Filter – Drain and Refill	19 qt (18 L) (OE/HDO-10)
Differential Front	11.6 qt (11.0 L) (SAE 75W-90)
Differential Rear	11.6 qt (11.0 L) (SAE 75W-90)
Wheel Hub Ends– Front and Rear	2.1 pt (0.9 L) (75W-90)
Rear Door/Ramp Hydraulic Fluid	6.5 qt (6.2 L) (OE/HDO-10)
Power Steering	5.5 qt (5.2 L) (OE/HDO-15-40)
Transfer Case – w/ Cooler	11.0 qt (10.4 L) (75W-90)
Windshield Wiper Fluid	4.0 qt (3.8 L) cleaning compound, windshield
A/C System	7.75 lb (3.51 kg) (R134A)

Table 6. Cooling System.

ITEM	SPECIFICATION
Radiator Working Pressure	15 psi (103 kPa) low idle

Table 7. Engine Configuration.

ITEM	SPECIFICATION
Make	International
Model	DT 570 ST
Type	Four-stroke, in-line
Cylinders	Six
Bore	4.59 in. (116.6 mm)
Stroke	5.75 in. (116.0 mm)
Displacement	570 cu-in. (9.3 L)
Peak Torque	1250 lb-ft (1695 N•m) @ 1200 rpm
Maximum Brake Horsepower (at 2,000 rpm)	375 hp
Maximum Governed Engine Speed	2,200 rpm

Table 8. Oil Filter.

ITEM	SPECIFICATION
Type	Full flow, spin-on
Quantity	1
Oil Pressure	31-70 psi (214-483 kPa)

Table 9. Fuel System Configuration.

ITEM	SPECIFICATION
Type	Diesel injection (electronically controlled)
Fuel Tank Capacity	57 gal. (216 L)
Air Cleaner	Dual element
Fuel Type	Diesel or JP8
Fuel Pressure	66 psi ± 5 psi (455 kPa ± 34 kPa)

Table 10. Electrical System.

ITEM	SPECIFICATION
Alternator	570 amp
Front Engine Accessory Drive	Single serpentine belt
Batteries	Hawker AGM (12V, 1225 CCA, 4 each, connected in series-parallel for 12V and 24V power)
(AFES) Backup Battery Unit (BBU)	Kidde Dual Spectrum 24.0V (3 year life)

Table 11. Transmission.

ITEM	SPECIFICATION
Make	Allison
Model	3200SP five-speed
Type	Electronic Control System, WTEC III – Allison 4th Generation

Table 12. Transmission Speeds.

ITEM	SPECIFICATION
Forward	Five
Reverse	One

Table 13. Transfer Case.

ITEM	SPECIFICATION
Make	Fabco
Model	TC-270-15
Type	Two-speed with NEUTRL (neutral)

Table 14. Axles.

ITEM	SPECIFICATION
Front	5000 ISAS Series/24,000 lb (10,890 kg) – Hendrickson
Rear	5000 ISAS Series/13,150 lb (13,150 kg) – Hendrickson

Table 15. Brake System.

ITEM	SPECIFICATION
Actuation	Air
Number of Brake Chambers	Two per axle, rear also equipped with spring brakes
Front and Rear	Hendrickson Inboard Mounted Air Disc Brake
Air Compressor	Bendix Tu-Flo 550
Truck Air System	110-130 psi (758-896 kPa)
System Operating Pressure	70 psi (483 kPa) min pressure

Table 16. Wheels.

ITEM	SPECIFICATION
Type	Two-piece Hutchinson bolt-together
Quantity	2 front; 2 rear per vehicle
Rim Size	20.00 x 10.00 front; 20 x 10.00 rear
Stud Quantity per Wheel	10
Wheel Assembly Bolt Torque	150-170 lb-ft (203-230 N•m)
Lug Nut Torque	450-500 lb-ft (610-678 N•m)

Table 17. Tires.

ITEM	SPECIFICATION
Type	Tubeless radial
Quantity	2 front; 2 rear per vehicle
Size	16.00R20XZL front and rear
Load Range	J
Tire Pressure: Empty Load - Highway, Over-Speed Warning at 59 mph (95 kph)	90 psi (621 kPa) @ 20,730 lb (9,400 kg) on front axle 100 psi (689 kPa) @ 25,500 lb (11,570 kg) on rear axle
Tire Pressure: Full Load - Highway, Over-Speed Warning at 45 mph (72 kph)	90 psi (621 kPa) @ 24,000 lb (10,890 kg) on front axle 105 psi (723 kPa) @ 30,500 lb (13,830 kg) on rear axle
Tire Pressure: Partial Load - Highway, Over-Speed Warning at 45 mph (72 kph)	90 psi (621 kPa) @ 23,300 lb (10,570 kg) on front axle 105 psi (723 kPa) @ 29,000 lb (13,150 kg) on rear axle
Tire Pressure: Full Load - Cross-Country, Over-Speed Warning at 45 mph (72 kph)	64 psi (441 kPa) @ 24,000 lb (10,890 kg) on front axle 94 psi (648 kPa) @ 30,500 lb (13,830 kg) on rear axle
Tire Pressure: Partial Load - Cross-Country, Over-Speed Warning at 45 mph (72 kph)	64 psi (441 kPa) @ 23,300 lb (10,570 kg) on front axle 94 psi (648 kPa) @ 30,500 lb (13,830 kg) on rear axle
Tire Pressure: Empty Load - Cross-Country, Over-Speed Warning at 45 mph (72 kph)	53 psi (365 kPa) @ 20,730 lb (9,400 kg) on front axle 74 psi (510 kPa) @ 25,500 lb (11,570 kg) on rear axle
Tire Pressure: Full Load - Mud/Sand/Snow, Over-Speed Warning at 20 mph (32 kph)	34 psi (234 kPa) @ 24,000 lb (10,890 kg) on front axle 60 psi (414 kPa) @ 30,500 lb (13,830 kg) on rear axle
Tire Pressure: Partial Load - Mud/Sand/Snow, Over-Speed Warning at 20 mph (32 kph)	34 psi (213 kPa) @ 23,300 lb (10,570 kg) on front axle 60 psi (310 kPa) @ 30,500 lb (13,830 kg) on rear axle
Tire Pressure: Empty Load - Mud/Sand/Snow, Over-Speed Warning at 20 mph (32 kph)	27 psi (186 kPa) @ 20,730 lb (9,400 kg) on front axle 40 psi (276 kPa) @ 25,500 lb (11,570 kg) on rear axle
Tire Pressure: Full Load - Emergency, Over-Speed Warning at 10 mph (16 kph)	29 psi (200 kPa) @ 24,000 lb (10,890 kg) on front axle 38 psi (262 kPa) @ 30,500 lb (13,830 kg) on rear axle
Tire Pressure: Partial Load - Emergency, Over-Speed Warning at 10 mph (16 kph)	29 psi (200 kPa) @ 23,300 lb (10,570 kg) on front axle 38 psi (262 kPa) @ 30,500 lb (13,830 kg) on rear axle
Tire Pressure: Empty Load - Emergency, Over-Speed Warning at 10 mph (16 kph)	25 psi (172 kPa) @ 20,730 lb (9,400 kg) on front axle 33 psi (228 kPa) @ 25,500 lb (11,570 kg) on rear axle

Table 18. Towing and Lifting.

ITEM	SPECIFICATION
Pintle Hook Maximum Load Capacity	100,000 lb (45,359 kg)
Front Tiedown Eyes Maximum Load Capacity	49,000 lb (22,226 kg)
Rear Tiedown Eyes Maximum Load Capacity	49,000 lb (22,226 kg)
Front Tow Eyes Maximum Load Capacity	61,500 lb (27,896 kg)
Forward Lifting Eyes Maximum Load Capacity	30,500 lb (13,835 kg)
Front Hook for Towing Maximum Load Capacity	15,000 lb (6,804 kg)

Table 19. Winch Cable.

ITEM	SPECIFICATION
Diameter	5/8 in. (15.9 mm)
Length	70 ft (21.3 m)
Ultimate Strength	40,000 lb (18,144 kg)
Working Load (Winch Maximum Rated Load)	18,000 lb (8,165 kg)

Table 20. Cabin.

ITEM	SPECIFICATION
Windshield, Door, and Side Window Glazing	Transparent armor
Personnel Capacity	7

END OF WORK PACKAGE

CREW MAINTENANCE

THEORY OF OPERATION

AMBULANCE

The Mine Resistant Ambush Protected (MRAP) M1266A1 is specially equipped to transport sick, injured and wounded Soldiers. Casualties can be transported and treated by a dedicated Medical Evacuation (MEDEVAC) platform in the patient/passenger compartment of the vehicle. On-board medical devices and stored medical supplies are used to monitor, assess, treat, and provide en route care. Clearing the battlefield of sick, injured, and wounded Soldiers is a Commander's responsibility. Dedicated MEDEVAC assets such as the M1266A1 Long Wheel Base (LWB) Ambulance allows the Commander the flexibility to carry-on the mission without taking combat platforms out of the fight to conduct CASEVAC missions.

The M1266A1 LWB Ambulance is built to survive with, maneuver with, and sustain with the supported force. Its primary missions include MEDEVAC from points of injury, casualty collection points, and ambulance exchange points to the supporting Battalion Aid Station.

DRIVETRAIN

This vehicle is equipped with an in-line, six-cylinder, fuel-injected turbocharged diesel engine, a five-speed automatic transmission, and a two-speed transfer case. These components move the vehicle forward, backward, and into LOW range in severe conditions. The output from the transfer case drives the rear differential and rear axle when in two-wheel drive. It drives the front and rear differentials and front and rear axles when in four-wheel drive. Vehicles must be brought to a full stop and the transmission shifted to NEUTRAL (N) to engage four-wheel drive or to shift the transfer case from HIGH (HI) to LOW (LO).

SUSPENSION AND AXLES

This vehicle is equipped with an Independent Suspension System (ISS). Front and rear differential carrier assemblies provide a central mounting point for the upper and lower control arms. Gear reduction wheel ends are attached to the control arms as well as coil springs and shock absorbers (two per side, four per axle). This configuration allows each wheel on the same axle to move up and down independently for better terrain handling. The front and rear differentials use propeller shafts to drive the geared hubs.

BRAKING SYSTEMS AND AXLES

The vehicle is equipped with air actuated front and rear inboard disc brakes and Anti-lock Brake System (ABS).

Disc brakes consist of an air brake chamber, dual piston disc brake caliper, automatic adjuster, brake hardware, disc brake pads, and brake rotor. At brake actuation, the air brake chamber applies force to the actuator lever, which converts linear motion into rotary torque on the main eccentric shaft. The rotary torque exerts clamping force on the inner pad, which causes a reaction through the brake caliper body, ensuring that both pads are loaded onto the rotor with equal force. When brake pads are forced onto the rotor, friction slows the movement of the rotor to stop the vehicle.

The ABS system uses wheel speed sensors, ABS modulator valves, and an Electronic Control Unit (ECU) to control all vehicle wheels. By monitoring individual wheel turning motion during braking and adjusting or pulsing the brake pressure at each wheel, the ABS controller is able to minimize slip between the tire and the road surface. When excessive wheel slip or wheel lockup is detected, the ABS controller will activate the pressure modulator valves to simulate a driver pumping the brakes. However, the ABS controller is able to pump the brakes on individual wheels independently, and with greater speed and accuracy than a driver.

ELECTRICAL SYSTEM

The vehicle has a dual electrical system consisting of a 24V alternator, starter, and four batteries in a series-parallel configuration that provide 12V or 24V power. Vehicle is equipped with a power inverter that supplies 110V AC to 110V outlets.

FUEL FIRED HEATER

This vehicle is equipped with a fuel fired heater which gives the operator the ability to pre-heat the engine in cold weather. The heater can be operated from the cabin by a switch or using a programmable timer when cold weather is expected. The heater regulates the engine coolant temperature between 149°F (65°C) and 176°F (80°C). If the coolant temperature rises above 176°F (80°C), the fuel fired heater will automatically switch off.

FUEL SYSTEM

The fuel system consists of three major subsystems:

- Fuel supply system
- Injection Control Pressure (ICP) system
- Fuel injectors

These subsystems work together to inject pressurized fuel into the combustion chambers in the engine. The fuel supply system delivers fuel from the fuel tanks to the injectors. The ICP system supplies the injectors with the high pressure oil, and the fuel injectors deliver high pressure fuel to the engine in response to Engine Control Module (ECM) inputs.

The fuel supply system includes the following:

- Fuel tank
- Supply lines
- Fuel filter
- Supply pump
- Fuel supply manifold
- Passages within the fuel supply manifold and engine cylinder head to feed injectors
- Fuel pressure regulator
- Return lines

PNEUMATIC (AIR) SYSTEM

The pneumatic system consists of a compressor, air brakes, and air assistance for the side doors.

Opening and closing of the armor-enforced doors is assisted by pneumatic cylinders mounted inside each of the side doors.

There are two air brake chambers per axle. The rear axle also has spring-applied parking brakes. The system has two air supply tanks. One tank supplies air for the front (secondary) brake system. The other supplies air to the rear (primary) brakes. The air is supplied from an engine-driven air compressor.

The air compressor compresses air for brake application. The driver operates a valve that controls air pressure to the brakes, and the pressure is determined by the driver's pedal stroke.

The pneumatic system also provides air for the vehicles Central Tire Inflation System (CTIS).

HEATING, VENTILATION, AND AIR-CONDITIONING (HVAC)

The HVAC system provides a comfortable cabin environment by controlling temperature and humidity.

Vehicle occupants can control the HVAC system functions with a mode selection panel, located to the left of the commander seat.

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)

The vehicle is equipped with multiple sensor-operated AFES in the cabin and engine compartment. The system is triggered automatically by Infrared (IR) sensors located in the cabin and engine compartment. The AFES control panel on the top center of the Instrument Panel (IP) shows system status and provides toggle switches to trigger the system manually. The cabin protection system extinguishers contain HFC-227 (heptafluoropropane, sodium bicarbonate, and amorphous silica). The engine protection system extinguisher contains ANSUL Plus 50 dry chemical (sodium amorphous silica).

Occupants can activate the cabin or engine extinguishers manually by lifting the cover on the desired switch and toggling the switch upward.

FIRE SUPPRESSION SYSTEM (FSS)

The vehicle is equipped with FSS for tire and fuel tank protection. The system can only be triggered manually using a control panel mounted next to the AFES control panel. The FSS control panel indicates system status. The FSS extinguishers contain a dry chemical agent.

Occupants can trigger the FSS extinguishers by lifting the cover on the switch and toggling the switch upward. One switch will trigger both the fuel tank and tire protection extinguishers, simultaneously.

HYDRAULIC SYSTEM (REAR DOOR/RAMP)

Hydraulics are used to open and close the rear door/ramp of the vehicle. An IP mounted toggle switch allows the driver to operate the rear door/ramp. A second toggle switch located on the driver side wall below the narcotics box allows crewmembers to operate the rear door/ramp. In the event of electrical failure, hydraulic failure, or emergency exit, the rear door/ramp can be lowered and raised using a manual release with handle for the manual hydraulic pump. In a total power failure, the rear door/ramp can be disconnected from the hydraulic cylinder and allowed to free-fall.

CTIS

The CTIS allows the driver to control tire pressure on all tires. The system allows the driver to select one of four terrain modes: HY (Highway), CC (Cross-Country), SS (Mud/Sand/Snow), and E (Emergency). The system also allows for selection of one of three load modes: Empty, Partial, and Full Load. The CTIS has the ability to detect maximum vehicle speed allowed for each mode. If the vehicle exceeds the maximum speed for the selected tire pressure, an indicator light located on the CTIS switch will warn the driver. If the average speed is exceeded for more than 1 minute, the system will automatically adjust the tire pressure.

ELECTRONIC STABILITY CONTROL (ESC)

The ESC with Automatic Traction Control is an active system that continuously monitors driver control inputs (steering angle, throttle, braking) and vehicle dynamics (yaw rate, lateral acceleration) and automatically makes corrections to engine throttle and brake applications at individual wheels to correct a roll-over condition or tire slippage. An off-road enable button is provided to disable the automatic traction control feature in mud or sand, or any condition where the ground beneath the vehicle is not solid. This button is the only manual input the operator has to the system.

REAR DIFFERENTIAL LOCK SYSTEM

The differential lock in the rear differential is controlled by the driver, and when engaged, forces both the left and right wheels on the rear axle to rotate at the same speed under nearly all circumstances. The differential lock enhances vehicle for operation and handling under poor road conditions.

OBJECTIVE GUNNERS PROTECTION KIT (OGPK)

The OGPK provides a 360° ballistic protection against small arms fire for the gunner. This kit consists of steel armor plating that surrounds the top of the turret and because it is mounted onto the turret ring, the armor will turn with turret. The OGPK is operated by the Improved Turret Drive System (ITDS).

END OF WORK PACKAGE

CHAPTER 2

OPERATOR INSTRUCTIONS

FOR

MINE RESISTANT AMBUSH PROTECTED (MRAP) VEHICLE

CREW MAINTENANCE

DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS

INTRODUCTION

This work package identifies and describes controls and indicators on the Instrument Panel (IP), center console, steering column, Automatic Fire Extinguishing System (AFES) and Fire Suppression System (FSS), Heating, Ventilation, and Air Conditioning (HVAC), Improved Turret Drive System (ITDS), foot controls, cab and passenger lights, rear door/ramp manual switch, and inverter on the Mine Resistant Ambush Protected (MRAP) vehicle.

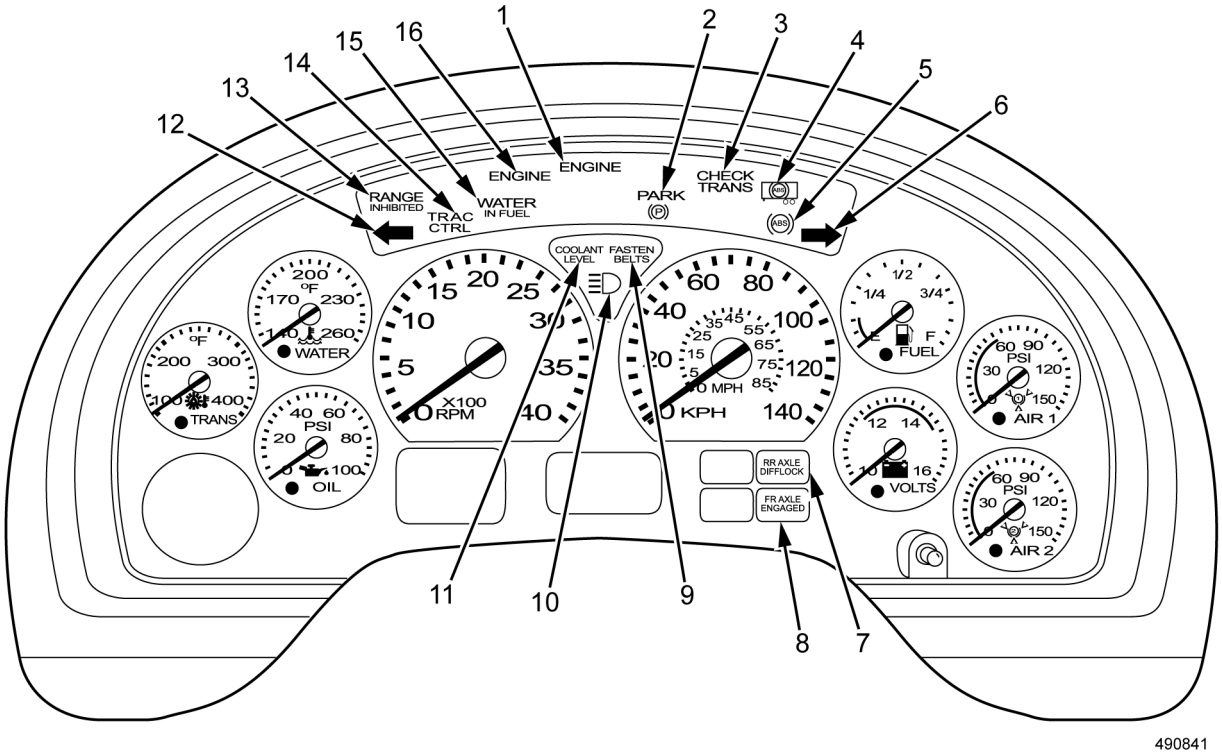


Figure 1. IP Cluster Indicators.

Table 1. IP Cluster Indicators.

Key	Control/Indicator	Function
1	RED ENGINE	Illuminates RED in conjunction with other warning lights or general text and warning messages to indicate a RED STOP alert.
2	PARK	Illuminates RED when the parking brake is applied.
3	CHECK TRANS	Illuminates AMBER when a transmission Diagnostic Trouble Code (DTC) is stored in Transmission Control Module (TCM).
4	Trailer ABS	Illuminates AMBER when a trailer Anti-lock Brake System (ABS) malfunction has been detected.
5	ABS	Illuminates AMBER when an ABS malfunction has been detected.
6	Right Arrow	Flashes GREEN when the right turn signal or the hazard lights are activated.
7	RR AXLE DIFF LOCK	Illuminates AMBER when rear differential lock is enabled.
8	FR AXLE ENGAGED	Illuminates RED when front locking differential has been locked.
9	FASTEN BELTS	Illuminates RED for approximately 10-15 seconds when ignition is turned to RUN to remind driver to fasten seatbelt.
10	High Beam	Illuminates BLUE when high beam headlights are activated.
11	COOLANT LEVEL	Illuminates RED if low coolant level is detected.
12	Left Arrow	Flashes GREEN when the left turn signal or the hazard lights are activated.

Key	Control/Indicator	Function
13	RANGE INHIBITED	Illuminates AMBER when the transmission is not engaged in the selected gear. The warning light goes off when the gearshift button is adjusted to the appropriate gear.
14	TRAC CTRL	Illuminates AMBER when vehicles stability is unstable during cornering. Brakes are applied automatically to correct slippage.
15	WATER IN FUEL	Illuminates AMBER when water is detected in the fuel system. The warning light goes off when the water is removed from the fuel system.
16	AMBER ENGINE	Illuminates AMBER when an engine malfunction has been detected.

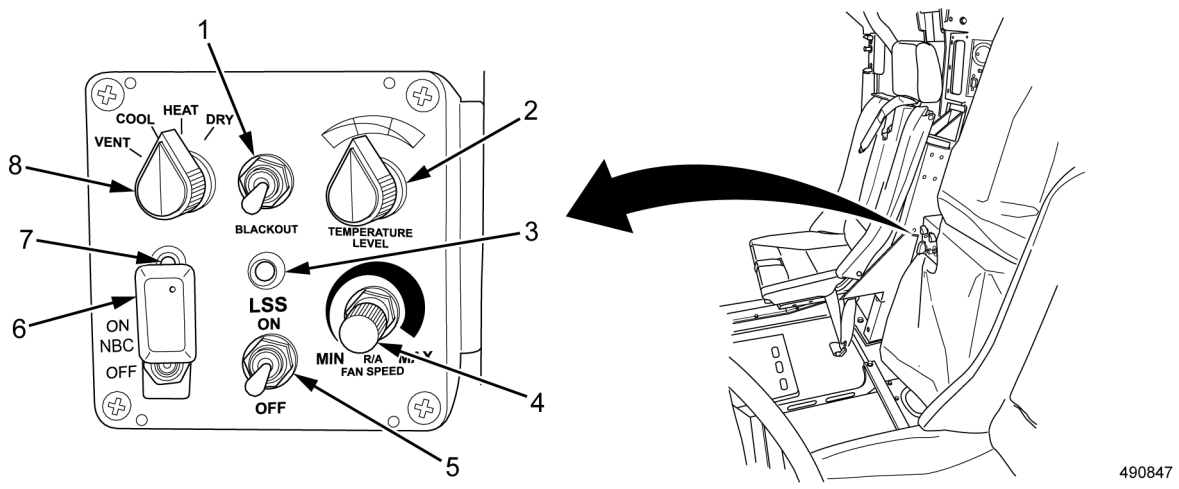


Figure 2. LSS/HVAC Control Panel.

Table 2. LSS/HVAC Control Panel.

Key	Control/Indicator	Function
1	BLACKOUT Switch	The BLACKOUT switch turns LSS GREEN and RED LED lights off when the toggle switch is in the down position.
2	TEMPERATURE LEVEL Switch	The TEMPERATURE LEVEL switch heats or cools the cabin air relative to ambient air.
3	GREEN LED	The GREEN LED indicator light illuminates when the LSS unit is turned ON and BLACKOUT switch is OFF.
4	R/A FAN SPEED Knob	The FAN SPEED knob controls the amount of air that is recirculated within the cabin.
5	LSS ON/OFF Switch	The LSS switch activates or deactivates the HVAC system.
6	NBC ON/OFF Switch	Turn switch on to bring fresh air in from outside.
7	RED LED	The RED LED indicator light illuminates when the Nuclear Biological Chemical (NBC) switch is turned ON and BLACKOUT switch is in the OFF position.
8	LSS/HVAC Switch	**NOTE** The Life Support System (LSS)/HVAC system will not command Air Conditioning (A/C) unless cabin temperature is above 67°F (19°C). In COOL or DRY modes, engine speed increases to 1300 rpm within 10 seconds. The LSS/HVAC has a fan speed control, a temperature control, and a mode control. The operating mode switch activates or deactivates the following modes: DRY – This is the defrost mode. When using this mode, turn knob above front windshield to direct air to the windshield. Use the TEMPERATURE LEVEL knob to adjust heat setting. HEAT – This setting provides maximum heat to the cabin area. VENT – Only fresh air from outside enters the cab. COOL – Fresh air and recycled air are mixed and cooled to provide A/C.

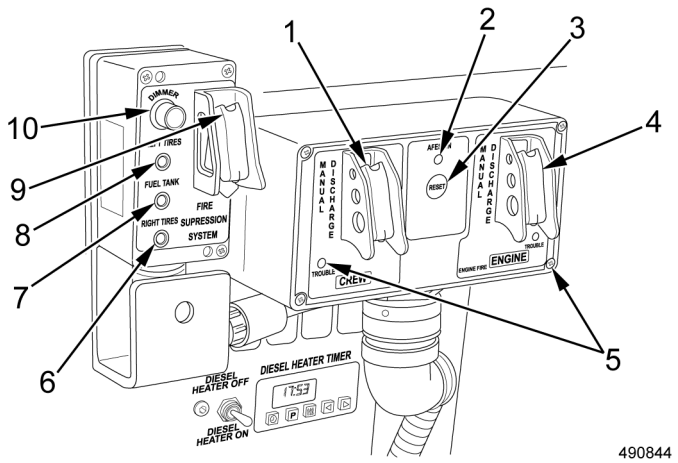


Figure 3. AFES and FSS Control Lamps and Switches.

Table 3. AFES And FSS Controls.

Key	Control/Indicator	Function
1	CREW Switch	Open the cover and push switch up to manually activate CREW AFES.
2	AFES ON Indicator	Illuminates GREEN when AFES control unit is activated. May remain on for up to 30 minutes after MAIN POWER switch is turned OFF.
3	RESET Button	Resets system after a discharge.
4	ENGINE Switch	Open the cover and push switch up to manually activate ENGINE AFES.
5	Trouble Indicator LEDs	Illuminates YELLOW and/or flashes if AFES detects low pressure in the extinguishing agent cylinder or an electrical fault in the system.
6	RIGHT TIRES Indicator LED	Illuminates GREEN and stays on when MAIN POWER switch is turned on. Also illuminates RED or YELLOW and/or flashes if FSS detects low pressure in the extinguishing agent cylinder or an electrical fault in the system.
7	FUEL TANK Indicator LED	Illuminates GREEN and stays on when MAIN POWER switch is turned on. Also illuminates RED or YELLOW and/or flashes if FSS detects low pressure in the extinguishing agent cylinder or an electrical fault in the system.
8	LEFT TIRES Indicator LED	Illuminates GREEN and stays on when MAIN POWER switch is turned ON. Also illuminates RED or YELLOW and/or flashes if FSS detects low pressure in the extinguishing agent cylinder or an electrical fault in the system.
9	FSS	Open the cover and push switch up to manually activate tires and fuel tank FSS.
10	DIMMER Switch	Controls the intensity of the backlighting for the FSS control panel. Rotate switch counterclockwise to decrease intensity. Rotate switch clockwise to increase intensity.

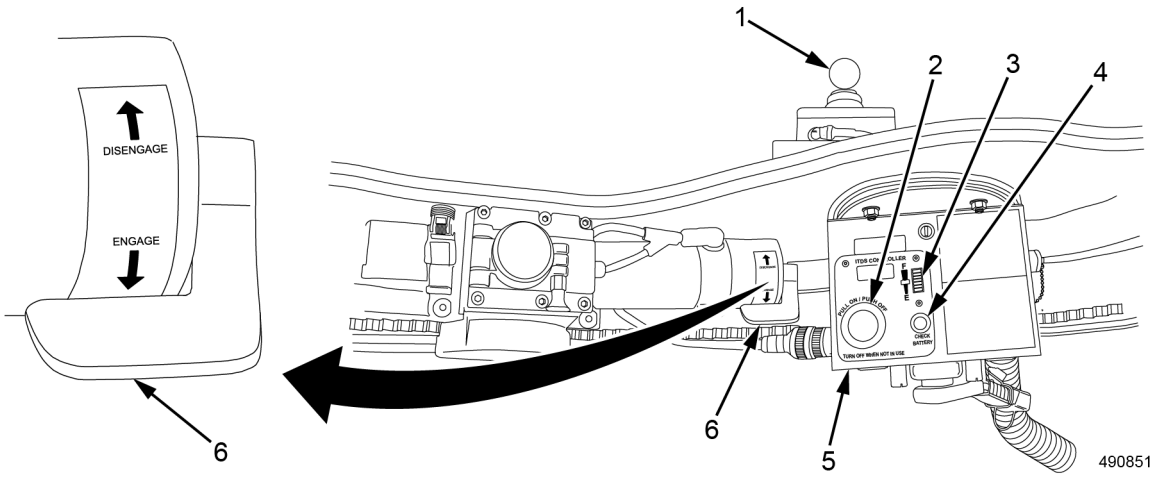


Figure 4. ITDS Controls.

Table 4. ITDS Controls.

Key	Control/Indicator	Function
1	Joystick Controller	Traverses Objective Gunners Protection Kit (OGPK) in POWER mode when holding brake control is in ENGAGE. Equipped with a magnetic base to allow gunner to position it as necessary.
2	RED ITDS Controller Knob	PULL ON/PUSH OFF to operate the ITDS.
3	Battery LED Indicator	Indicates charge level of ITDS batteries.
4	ITDS CHECK BATTERY push button	Push button to verify charge level of ITDS batteries.
5	ITDS	Controls ITDS operation and verifies charge of ITDS batteries.
6	Holding Brake Controller	In MANUAL Mode (ITDS controller is OFF): 1. When the holding brake controller is in ENGAGE, the OGPK is locked and will not traverse or spin at all. 2. When the holding brake controller is in DISENGAGE, the OGPK is unlocked and able to traverse or spin freely. In POWER Mode (ITDS controller is ON): 1. When the holding brake controller is in ENGAGE, the OGPK will traverse only using the joystick controller and will not spin. 2. When the holding brake controller is in DISENGAGE, the joystick controller will not traverse the OGPK, but it will spin if enough force is applied.

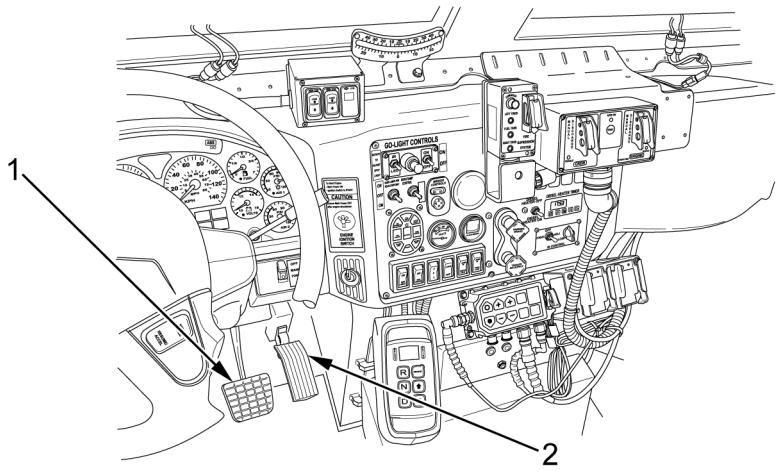


Figure 5. Cabin Mounted Foot Controls.

Table 5. Cabin Mounted Foot Controls.

Key	Control/Indicator	Function
1	Service Brake Pedal	Engages service brakes. Apply pressure to stop.
2	Accelerator Pedal	Controls engine speed. Apply pressure to accelerate.

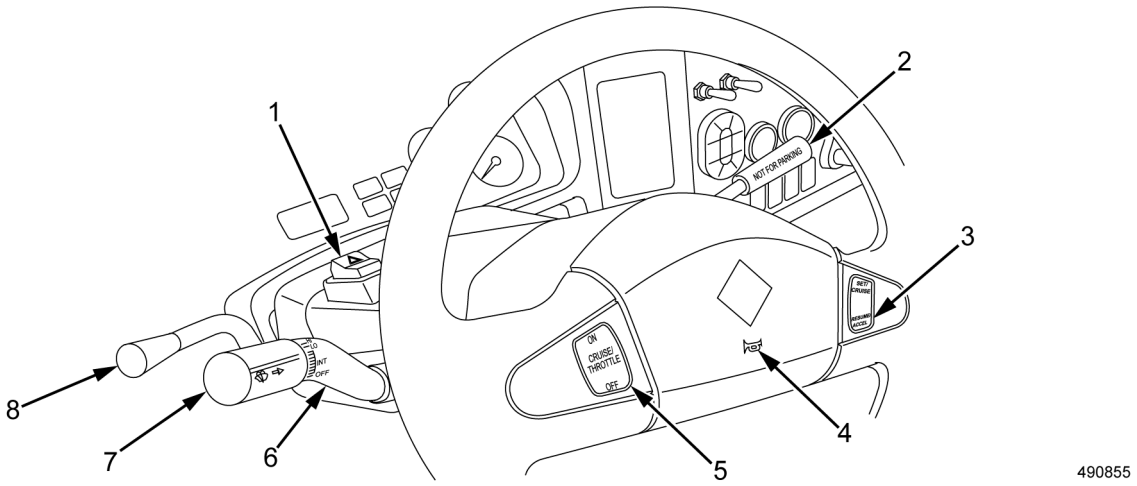


Figure 6. Steering Wheel and Column Controls.

Table 6. Steering Wheel And Column Controls.

Key	Control/Indicator	Function
1	Emergency Flasher Switch	To activate hazard warning flashers, press switch forward. To deactivate hazard warning flashers, press switch backward.
2	Trailer Brake Hand Control	When pulled down, the trailer brake hand control routes air pressure to the rear service brake lines. The red trailer air supply knob must be pushed in for trailer brake operation.
3	SET/CRUISE, RESUME/ACCEL Switch	When the CRUISE/THROTTLE switch is ON, push SET/CRUISE to set cruise speed to current vehicle speed. Push the RESUME/ACCEL switch to resume the previously set cruise speed or accelerate the current set vehicle speed. The RESUME/ACCEL switch will also increase engine idle speed when the CRUISE/THROTTLE switch is turned ON and vehicle is in NEUTRAL (N).
4	Horn	Press the center of the steering wheel to sound the horns.
5	CRUISE/THROTTLE Switch	Turns cruise control or throttle control ON or OFF. Push ON to activate and OFF to deactivate cruise control or throttle control.
6	Turn Signal Lever, Headlight High/Low Beam Lever	Pull lever up to signal right turn. Push lever down to signal left turn. When turn is complete, lever will automatically return to original position. Pull directional lever to activate headlight high beams. Pull directional lever half way back to activate flash-to-pass high beam feature. High beam indicator on dash will illuminate BLUE when high beams are activated.
7	Windshield Wiper/Washer Controls	The electric wiper has two constant speeds, HI (high) and LO (low), and a range of INT (intermittent) off/on cycle intervals. The windshield washer is controlled by the WASHER/WIPER knob. Push knob inward to activate washers.
8	Steering Wheel Tilt Adjustment Lever	Pull lever to adjust steering wheel. Release lever when steering wheel is in the desired position.

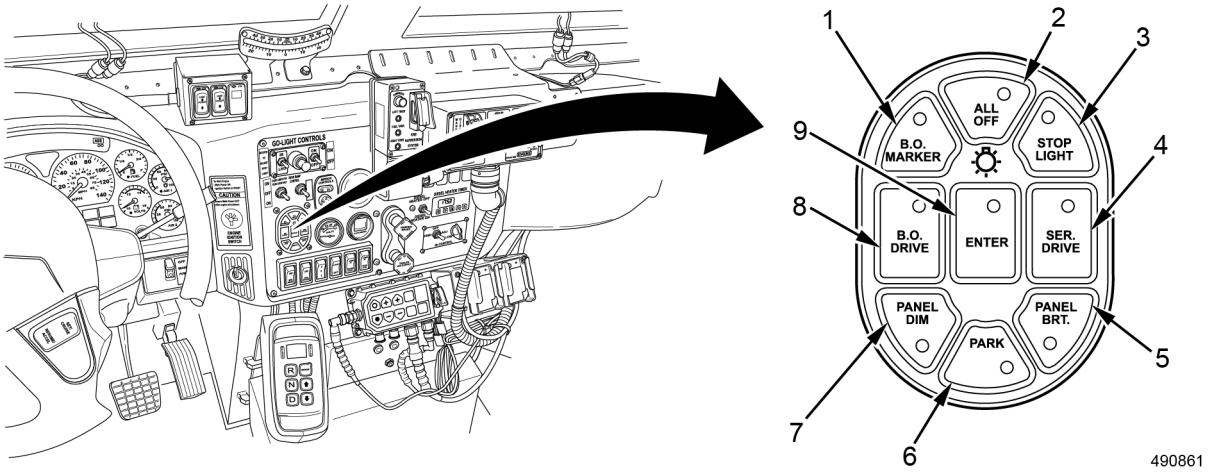


Figure 7. MVLS.

Table 7. MVLS.

Key	Control/Indicator	Function
1	B.O. MARKER	Press Blackout B.O. MARKER and ENTER to activate front and rear blackout marker lamps. In this mode, Blackout (B.O.) brake lamps will also function.
2	ALL OFF	Press ALL OFF and ENTER to deactivate all lights. The keypad backlight will turn off after 20 seconds. The default selection on the Master Vehicle Light Switch (MVLS) is ALL OFF. The turn signals, hazard lights, horn, and audible alarm (for low air pressure and malfunction indicator lamps) are only enabled when a selection on the MVLS, other than B.O., is made. They are all inoperable in ALL OFF, B.O. MARKER, and B.O. DRIVE selections.
3	STOP LIGHT	Press STOP LIGHT and ENTER and both stop lights will illuminate when the service brake is pressed. Stop lights are normally in the OFF position.
4	SER. DRIVE	Press SER. DRIVE and ENTER to turn on all lights.
5	PANEL BRT.	Press PANEL BRT to brighten all panel switches and IP lights.
6	PARK	Press PARK and ENTER to turn all marker lights on.
7	PANEL DIM	Press PANEL DIM to dim all panel switches and IP lights.
8	B.O. DRIVE	Press B.O. DRIVE and ENTER to activate all four B.O. marker lamps and B.O. DRIVE light. B.O. brake lamps will also function.
9	ENTER	When a desired mode/function is selected, an indicator light in the button will flash. Pressing ENTER after each selection will activate the mode/function.

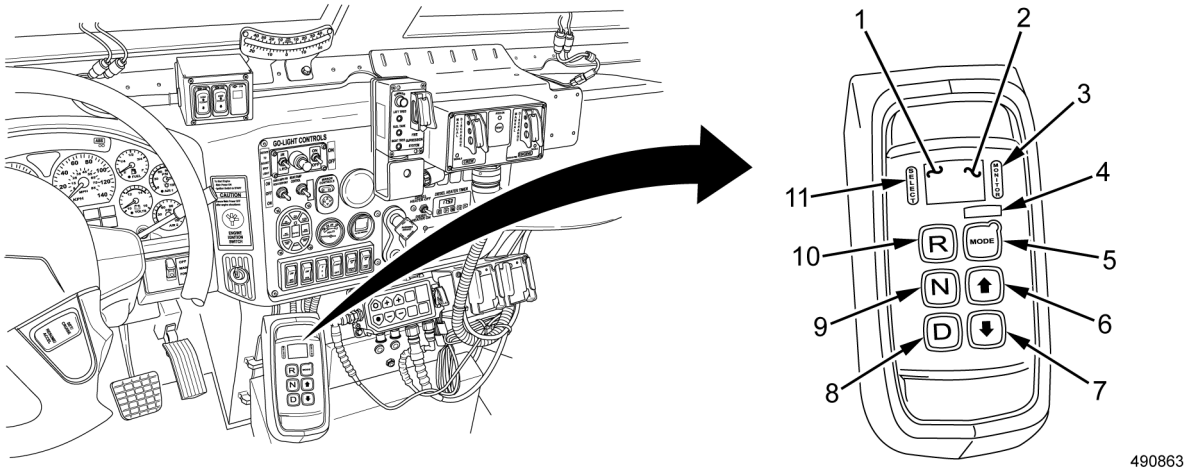


Figure 8. Transmission Gear Selector Display.

Table 8. Transmission Gear Selector Display.

Key	Control/Indicator	Function
1	Display Window (Left Side)	Displays gear selected.
2	Display Window (Right Side)	Displays which transmission gear is active.
3	MONITOR	The MONITOR label refers to the function on the right side of display.
4	Service Light	Indicates a transmission fault.
5	MODE	Used at Field Level Maintenance.
6	UP Arrow	Manually upshifts transmission one gear at a time, stopping at the 5th gear.
7	DOWN Arrow	Manually downshifts transmission one gear at a time, stopping at the 1st gear.
8	D	Shifts transmission into DRIVE and allows a full range of gears, 1 through 5.
9	N	Shifts transmission to NEUTRAL. It is also used when starting or parking vehicle.
10	R	Shifts transmission to REVERSE.
11	SELECT	The SELECT label refers to the function on the left side of display.

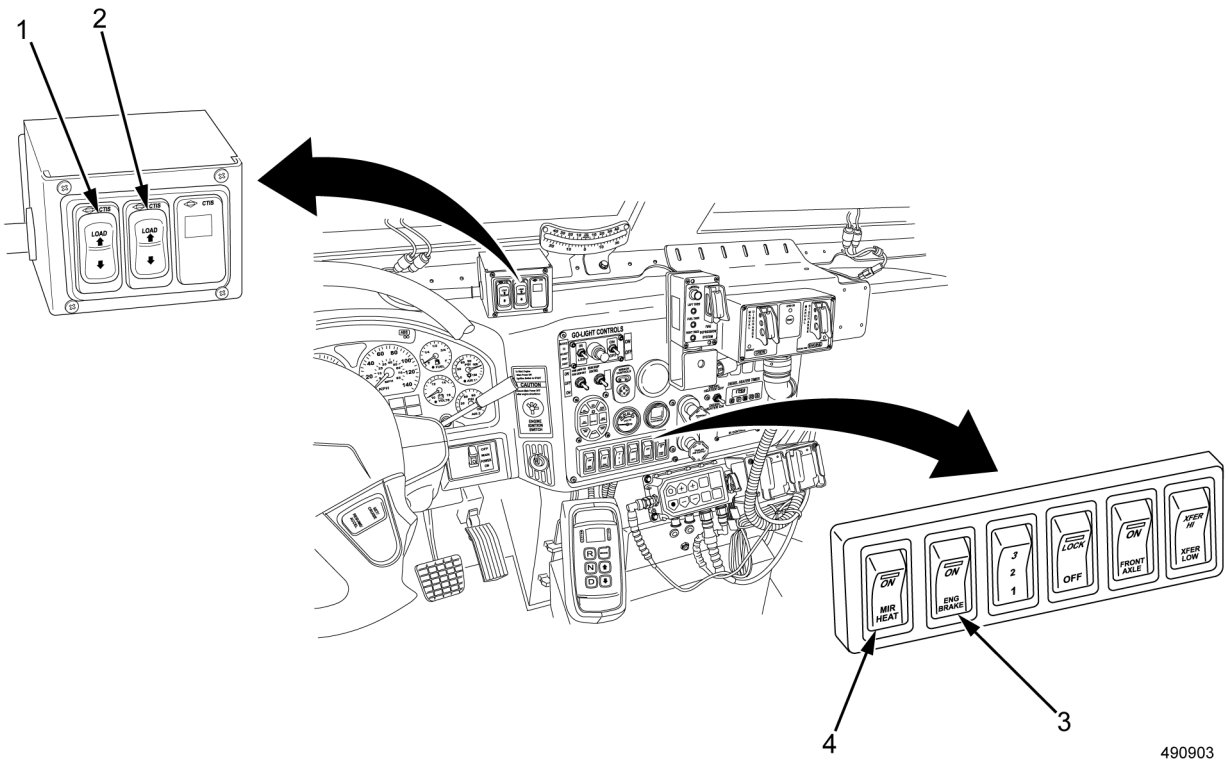


Figure 9. CTIS, ENG BRAKE, and MIR HEAT Switches.

Table 9. CTIS, ENG BRAKE, And MIR HEAT Switches.

Key	Control/Indicator	Function
1	CTIS Terrain Switch	Toggle switch up to increase tire pressure and down to decrease tire pressure. There are four terrain settings: Highway (HY) – for travel on paved surfaces at higher speeds; Cross-Country (CC) – for reduced-speed operation on secondary roads; Mud/Sand/Snow (SS) – for reduced-speed operation on unpaved surfaces; and Emergency (E) – for selection of extremely low tire pressures to help free a stuck vehicle.
2	CTIS Load Switch	Toggle switch up for increased load and down for decreased load. There are three load settings: empty load (no bars), partial load (four bars), and full load (eight bars).
3	ENG BRAKE Switch	Allows driver to slow vehicle or maintain constant speed on steep grades, avoiding prolonged use of service brake. To activate system, push in top of ENG BRAKE switch. Switch indicator will illuminate when the system is on.
4	MIR HEAT Switch	To turn on the heating function for the side mirrors, push the top of the MIR HEAT rocker switch. To turn the MIR HEAT rocker switch off, push the bottom of the switch.

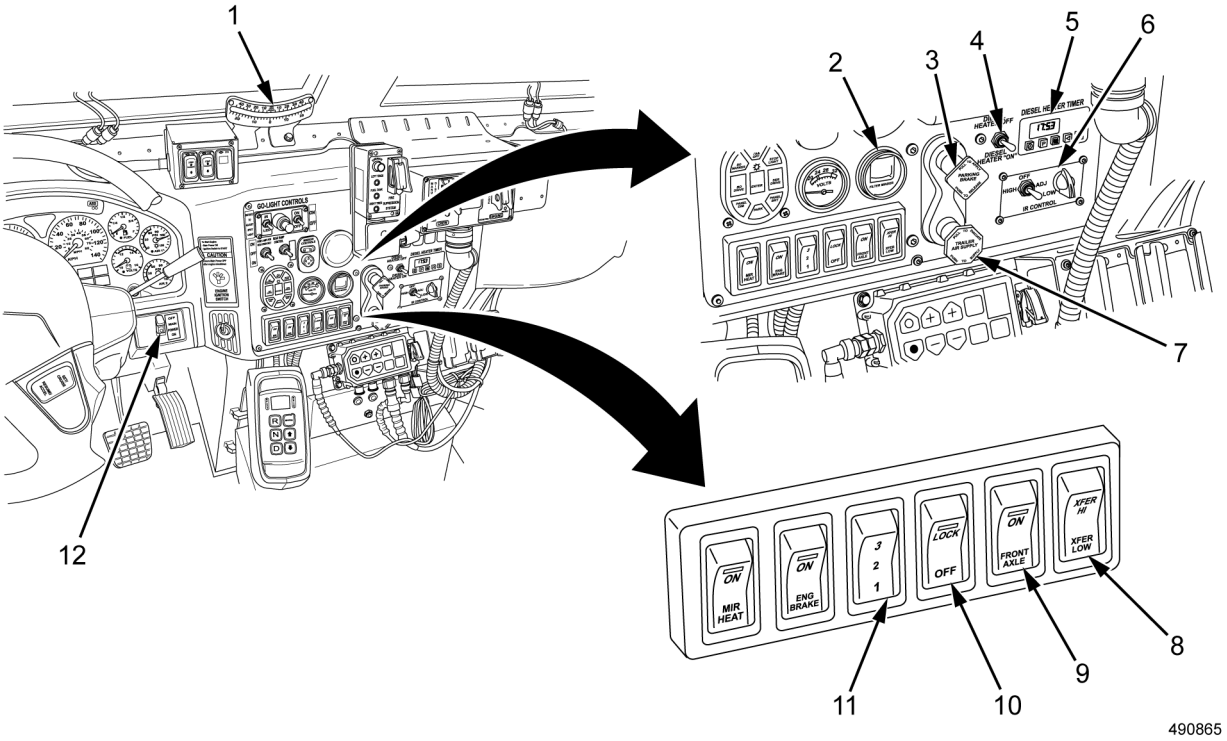


Figure 10. IP Gauges and Switches.

Table 10. IP Gauges And Switches.

Key	Control/Indicator	Function
1	INCLINOMETER	This gauge shows the percentage of left to right tilt.
2	AIR FILTER RESTRICTION Gauge	Indicates how much engine air cleaner capacity has been used and how much filter capacity remains. Measures maximum restriction of the filter elements when engine is operated at full load and locks at that point. Press YELLOW RESET button after new filter elements are installed.
3	PARKING BRAKE Knob	To apply parking brake, pull YELLOW knob out firmly. To release parking brake, push YELLOW knob in firmly.
4	DIESEL HEATER Switch	Allows driver to turn the fuel fired heater on. To turn on the heater, push the toggle switch down. To turn off the heater, push the toggle switch up.
5	DIESEL HEATER TIMER	Used to automatically turn the fuel fired heater ON and OFF. The heater timer can be programmed with preset on and off times.
6	IR Controls	The toggle switch will turn the Infrared (IR) system to HIGH, OFF, or ADJ (adjust). The LOW/HIGH knob adjusts the intensity of the IR system. When the toggle switch is in the ADJ position, the control knob can be adjusted between HIGH or LOW intensity.
7	TRAILER AIR SUPPLY Knob	To apply trailer air supply, push RED knob in firmly. To release trailer air supply, pull RED knob out firmly.

Key	Control/Indicator	Function
8	XFER Switch	Push top of the XFER switch (HI) to activate transfer case in high gear. Set switch in the middle position (neutral) will allow the vehicle to be towed or to perform special applications. Push bottom of the XFER switch (LO) to activate the transfer case in low gear.
9	FRONT AXLE Switch	Push bottom of the FRONT AXLE switch engages the front axle (4-wheel drive). Push top of the switch to disengage front axle (2-wheel drive).
10	DIFF LOCK Switch	Illuminates when switch is pushed up. In extremely slippery conditions, the rear differential can be locked to provide maximum traction and equal power to both rear wheels. Rear differential should be locked before encountering extremely slippery conditions.
11	Engine Brake Control Switch	Allows driver to select amount of engine braking that will be applied. The switch is used to select one of three braking levels to accommodate terrain, driving conditions, or driver preference. The three braking levels are 1 (33%), 2 (66%), and 3 (100%).
12	MAIN POWER Switch	MAIN POWER switch in ON position (down) allows power to go to the ignition switch and multiple vehicle electrical power circuits except power mirrors, windshield wipers, HVAC, and electronic gauge cluster.

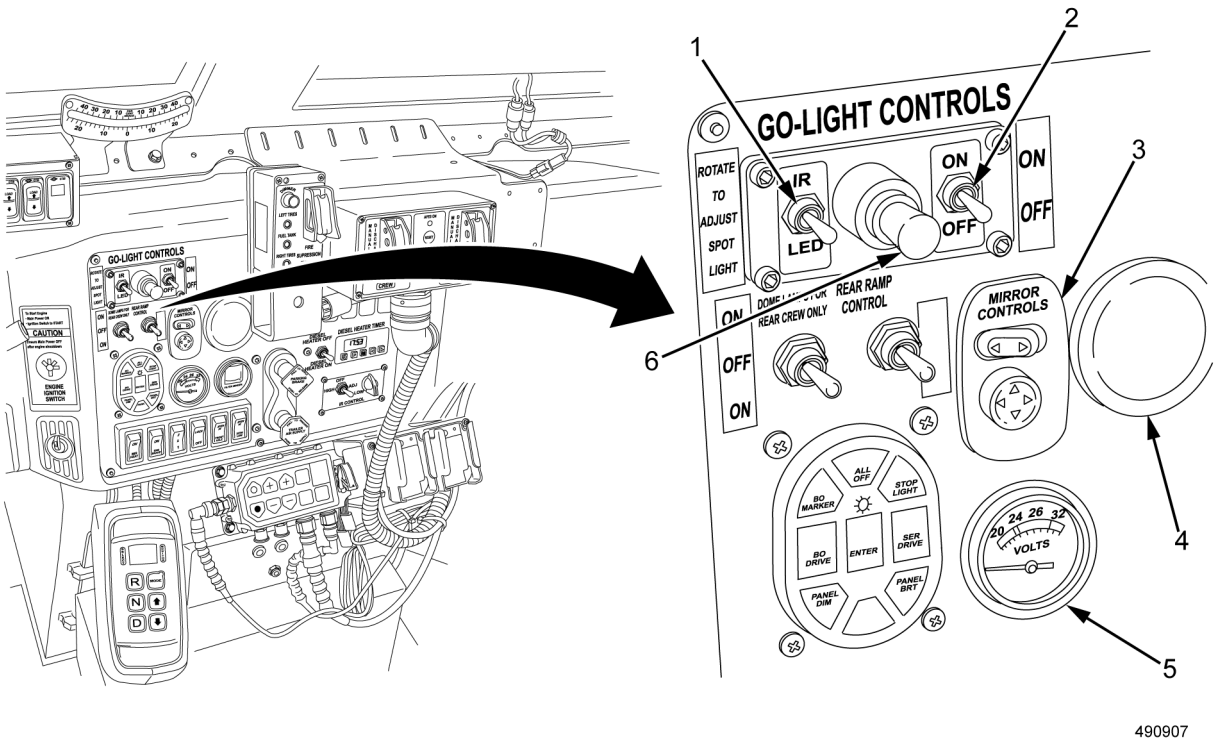


Figure 11. Go-Light Controls.

Table 11. Go-Light Controls.

Key	Control/Indicator	Function
1	GO-LIGHT CONTROLS Spotlight IR/LED Switch	Switch to IR for night vision or LED for normal spotlight.
2	GO-LIGHT CONTROLS Spotlight ON/OFF Switch	To operate the spotlight, place the toggle switch to the ON position.
3	Mirror Controls	Use the rocker switch with four arrows to adjust both mirrors left or right and up and down. Use the rocker switch with two arrows to select which mirror needs adjustment.
4	Blank Cover	Not Used.
5	VOLTS Gauge, 24V System	Indicates the 24V battery system voltage when the engine is running. This is for the 24V system only.
6	GO-LIGHT CONTROLS Spotlight Toggle Control	Rotates the spotlight in the desired direction.

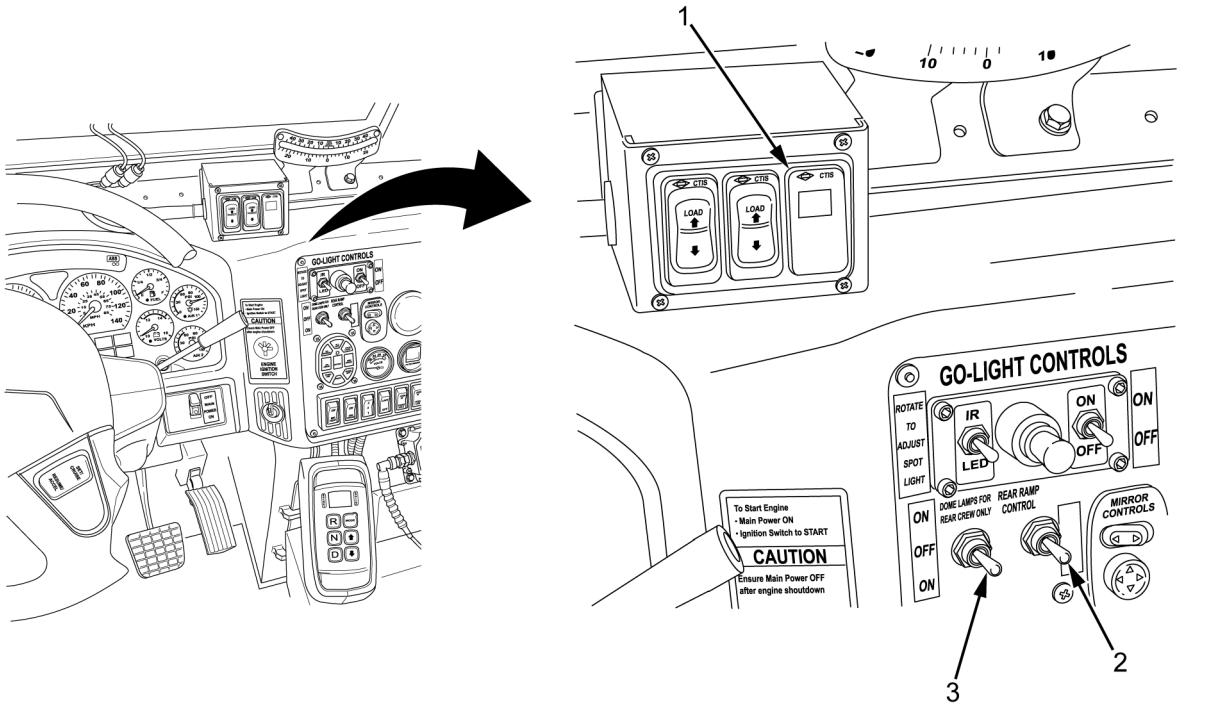


Figure 12. CTIS DDM, REAR RAMP, DOME LAMPS Gauges and Switches.

Table 12. CTIS DDM, REAR RAMP, DOME LAMPS Gauges And Switches.

Key	Control/Indicator	Function
1	CTIS Driver Display Module (DDM)	Any terrain switch selections from the operator will be displayed on this module to indicate what mode the Central Tire Inflation System (CTIS) is in. There are four indicators on this display: OVERSPEED – This signal indicates vehicle speed is too fast for pressure selected. Reduce speed or select higher pressure by pressing appropriate switch. Continued operation in this mode will result in system automatically selecting more appropriate pressure setting. CHECK TIRE – This signal indicates one or more tires may be at significantly lower pressure than others and could indicate that tire is not holding pressure. FRT RR TLR – A flashing indicator identifies tire pressure is changing or being checked and a solid bar indicator identifies target tire pressure has been achieved in the front (FRT), rear (RR), or trailer (TLR) tires. (- -) – Two dashes indicates a system fault.
2	REAR RAMP CONTROL Switch	Operates the door/ramp up or down electrically from the front of the cabin.
3	DOME LAMPS Rear Passenger Light Switch	Operates rear passenger lights.

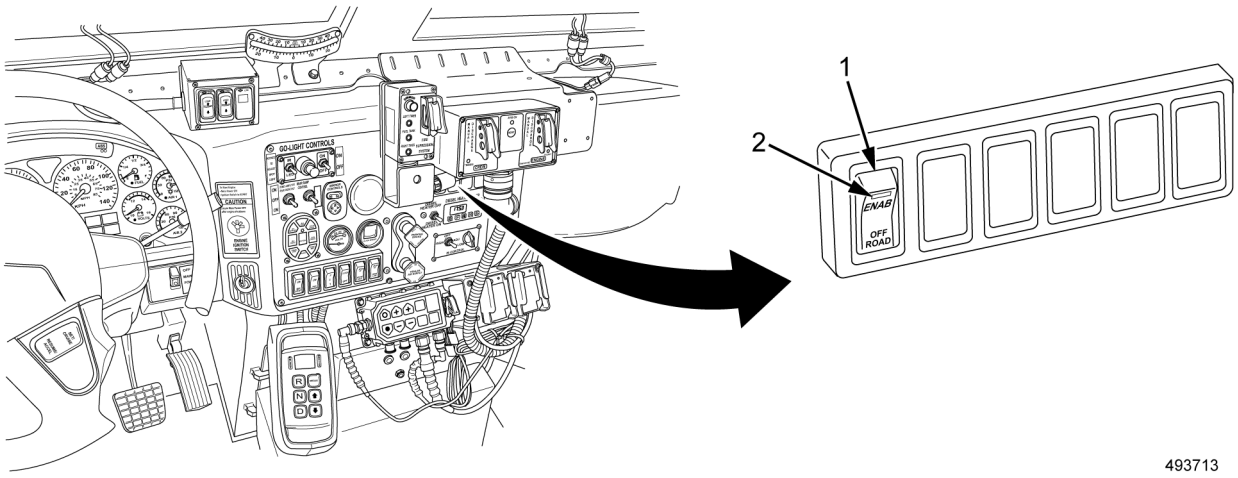


Figure 13. ENAB/OFF ROAD Switch.

Table 13. ENAB/OFF ROAD Switch.

Key	Control/Indicator	Function
1	Electronic Stability Control (ESC)	ESC allows vehicle to maintain better control and stability. System is automatically engaged when toggle switch (Figure 13, Item 1) is in DOWN position. To deactivate ESC when driving off road, toggle ENAB/OFF ROAD switch UP. The indicator (Figure 13, Item 2) on ENAB/OFF ROAD switch will illuminate.

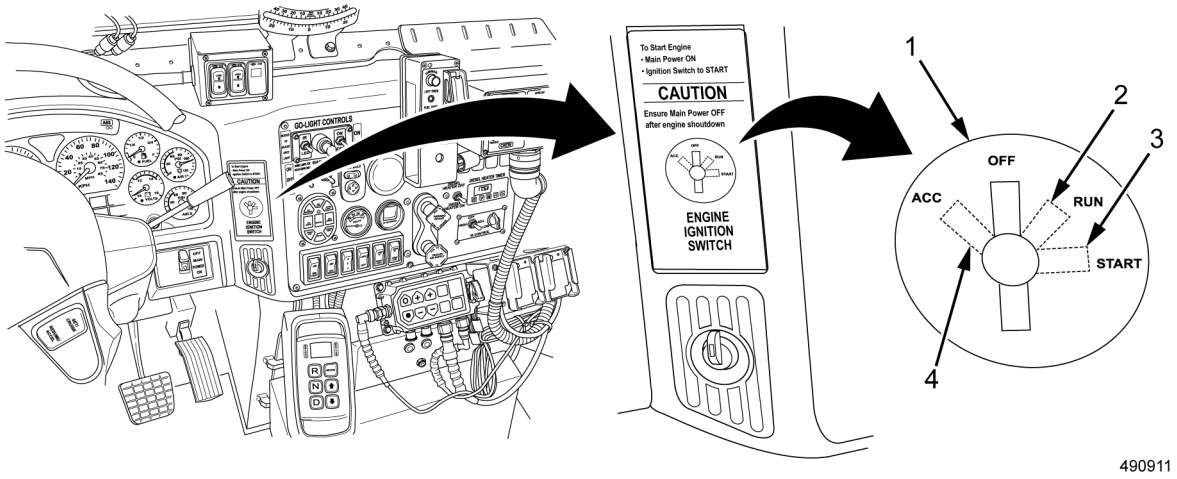


Figure 14. Ignition Switch.

Table 14. Ignition Switch.

Key	Control/Indicator	Function
1	ENGINE IGNITION SWITCH	Use the engine ignition switch to start the engine and activate all vehicle systems.
2	RUN	After the ignition switch is released from START, it moves to RUN. The engine will continue to run while the ignition switch is in RUN until the ignition switch is turned OFF.
3	START	To start the engine, turn the ignition switch to START, release switch after engine starts.
4	ACC	ACC (accessory) position will apply power to the following vehicle accessories: power mirrors, windshield wipers, HVAC, and electronic gauge cluster..

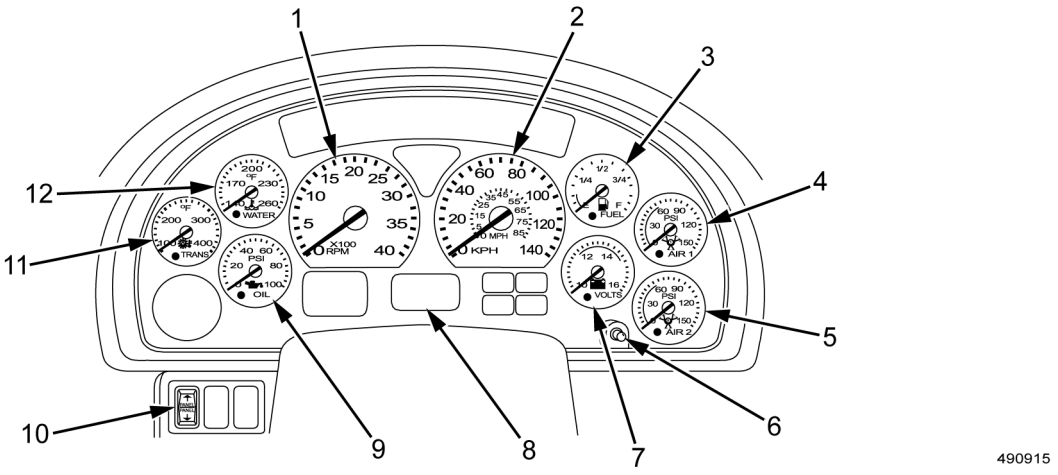


Figure 15. IP Cluster Gauges and Dimmer Switch.

Table 15. IP Cluster Gauges And Dimmer Switch.

Key	Control/Indicator	Function
1	Tachometer Gauge	Indicates the engine speed in Revolutions Per Minute (RPM).
2	Speedometer Gauge	Shows the vehicle speed in Miles Per Hour (MPH) or Kilometers Per Hour (KPH).
3	FUEL Gauge	Shows the approximate fuel level in the fuel tank. When the fuel level reaches approximately 1/8 full (8 gallons), the gauge warning light will illuminate and an audible alarm will sound (5 beeps).
4	AIR Pressure Gauge #1	Indicates air pressure available for the primary air brakes. The RED indicator light and under-limit audible alarm will indicate when the air pressure is less than 70 psi (483 kPa).
5	AIR Pressure Gauge #2	Indicates air pressure available for the secondary air brakes. The RED indicator light and under-limit audible alarm will indicate when the air pressure is less than 70 psi (483 kPa).
6	Display/Reset Button	Toggles odometer display between miles traveled, trip odometer, hours, trip hours, and Miles Per Gallon (MPG). Button also resets trip odometer and trip hours.
7	VOLTS Gauge, 12V System	Indicates the battery voltage when the engine is running. The RED indicator light at the bottom of the gauge illuminates when the battery voltage is too high (>15V) or low (<12V). This is for the 12V side only.
8	Odometer Display	Displays current transmission gear selection. Registers accumulated distance vehicle has traveled in miles and trip odometer. Registers the hours and trip hours the engine has operated. Displays MPG.
9	OIL PSI Gauge	Indicates engine oil pressure. Normal operating temperature is 31 to 70 psi (214 – 483 kPa). A RED indicator light at the bottom of the gauge dial indicates low engine oil pressure.
10	Panel Dimmer Switch	Controls the brightness of the odometer display.

Key	Control/Indicator	Function
11	TRANS Temperature Gauge	Indicates the transmission lubricant temperature in degrees Fahrenheit (F). A RED indicator light, located at the beginning of the gauge dial, indicates excessive oil temperature >250°F (>121°C).
12	WATER (Engine Coolant) Temperature Gauge	Indicates the engine coolant temperature. The RED indicator light at the bottom of the gauge indicates the engine coolant temperature has exceeded 228°F (109°C).

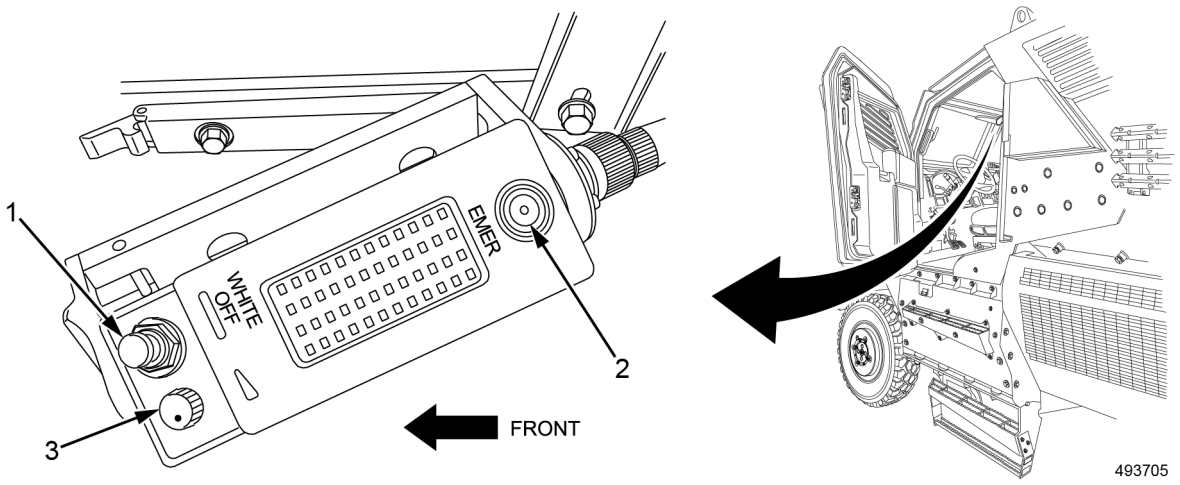


Figure 16. Cab Interior Light.

Table 16. Cab Interior Light.

Key	Control/Indicator	Function
1	Cab Interior Light Switch	Knob in center position light is OFF. Knob in rearward position light is WHITE. Knob in forward position light is GREEN.
2	EMER	When cab interior light is in the OFF position, press and hold EMER button to illuminate the light GREEN.
3	Cab Interior Light Control	Controls the brightness of the cab interior light.

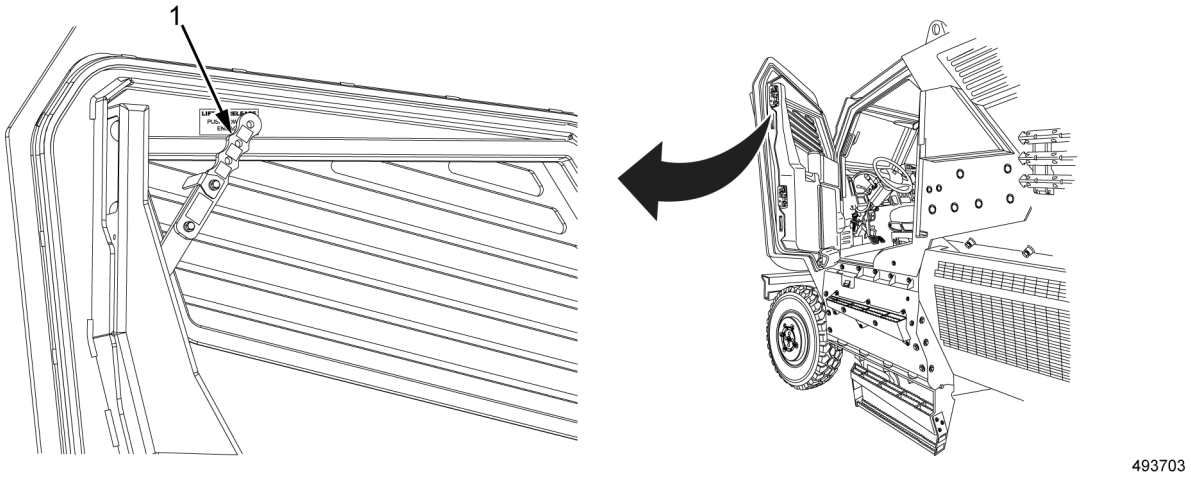


Figure 17. Driver Interior Door Combat Lock Lever.

Table 17. Driver Interior Door Combat Lock Lever.

Key	Control/Indicator	Function
1	Interior Door Combat Lock Lever	**NOTE** Driver side shown; commander side similar. Locks driver or commander door from inside cabin so door can not be opened from the outside of vehicle.

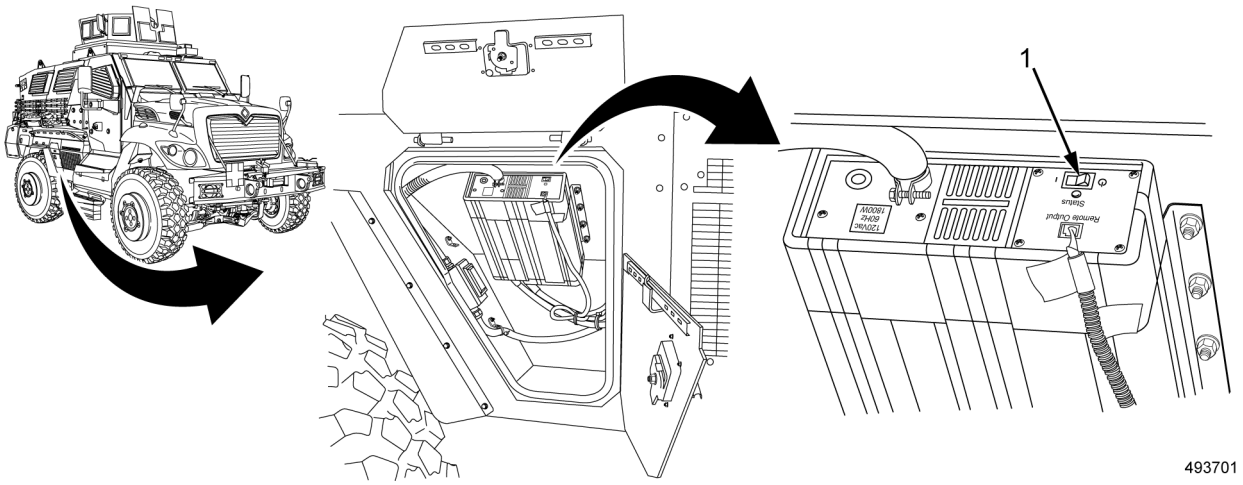


Figure 18. 24V to 110V Inverter Switch.

Table 18. 24V To 110V Inverter Switch.

Key	Control/Indicator	Function
1	Inverter ON Switch	**NOTE** The inverter has a remote ON/OFF switch in the passenger compartment. The inverter switch has to be switched to the (I) position to use remote switch. Converts 24V to 110V.

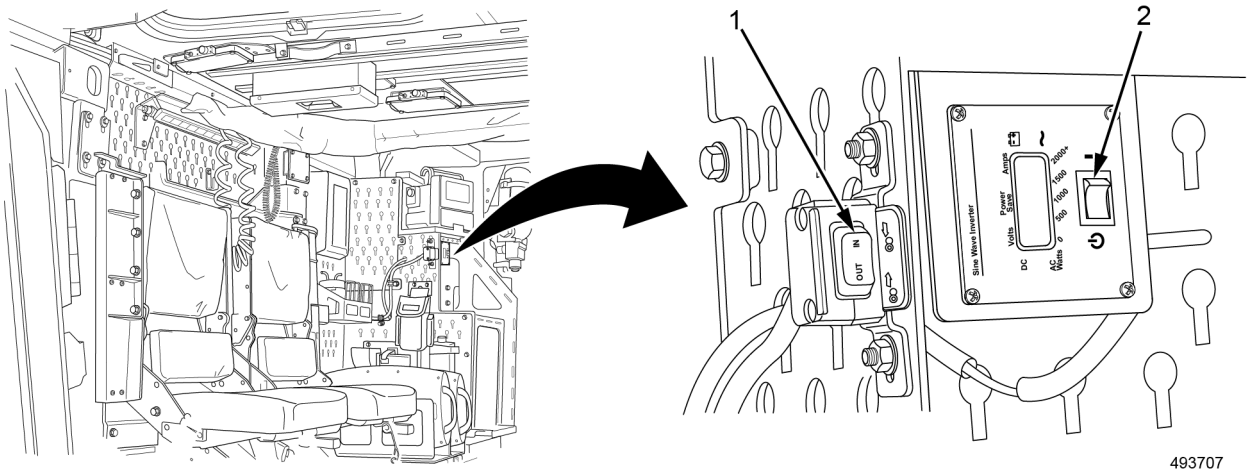


Figure 19. Remote Inverter Switch and Litter Lift Switch.

Table 19. Remote Inverter Switch And Litter Lift Switch.

Key	Control/Indicator	Function
1	Litter Lift Switch	Press switch OUT to lower or IN to lift the litter from trolley rails to seat platform position.
2	Remote Inverter Switch	**NOTE** The inverter switch has to be switched to the (I) position to use remote inverter switch. Remote inverter switch must be activated to supply 110V to outlets. Remote inverter switch turns on the display next to switch showing inverter battery voltage.

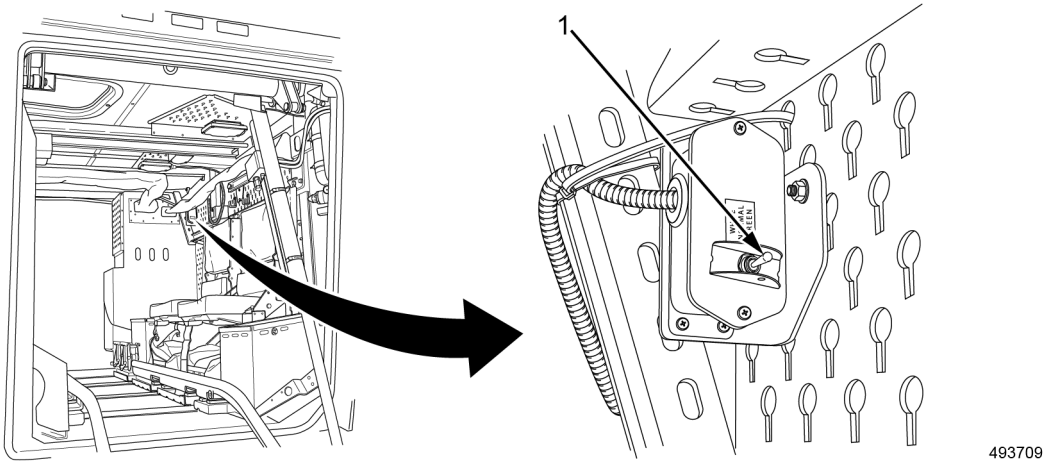


Figure 20. Passenger Compartment Light Switch.

Table 20. Passenger Compartment Light Switch.

Key	Control/Indicator	Function
1	Passenger Compartment Light Switch	Controls color of passenger lamps. The three positions are NORMAL, WHITE, AND GREEN.

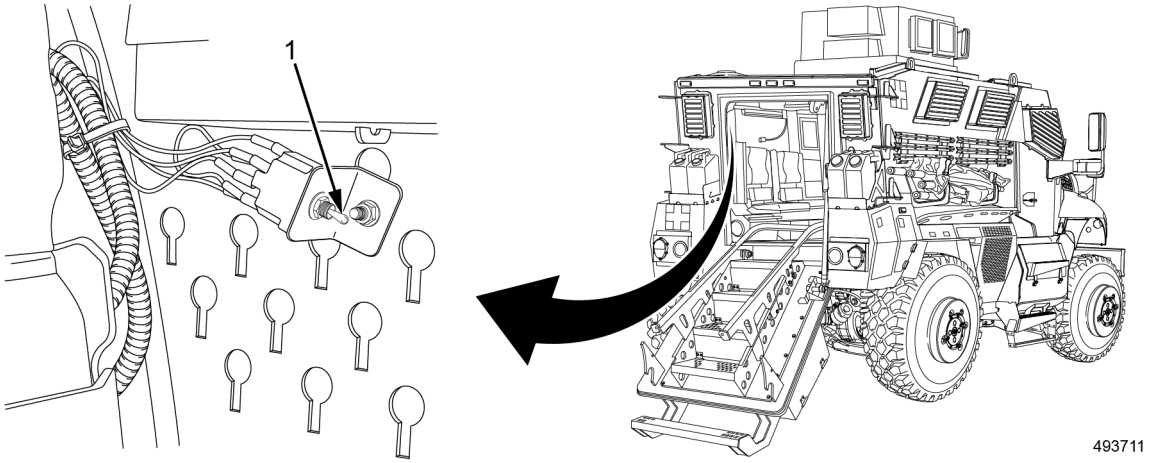


Figure 21. Passenger Compartment Ramp Switch.

Table 21. Passenger Compartment Ramp Switch.

Key	Control/Indicator	Function
1	Passenger Compartment Rear Door/Ramp Switch	Opens and closes rear door/ramp.

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - SIDE DOORS OPERATION

INITIAL SETUP:

Equipment Condition
Engine shutdown (WP 0013)

OPERATING PROCEDURES

WARNING

Do not use side door handles as hand grip to enter or exit vehicle cabin. Use of any side door handle as hand grip may cause air-assisted side door to open or close. Failure to comply may result in injury or death to personnel.

Do not use steering wheel as hand grip to enter or exit vehicle cab. Use of steering wheel for hand grip may cause sudden violent jerking of vehicle or damage to adjustable steering wheel bearing. When entering or exiting cab, use three-point contact system. Failure to comply may result in injury or death to personnel and/or damage to equipment.

The side doors are heavy. Ensure that no one is standing directly beside them before opening and closing. Use caution when opening or closing the doors, especially when the vehicle is parked on an incline. Ensure that all body parts and gear are clear before closing side doors. Failure to comply may result in injury or death to personnel.

Side Door Entry

WARNING

To prevent falls from the sides, rear, or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

NOTE

Driver side shown; commander side similar.

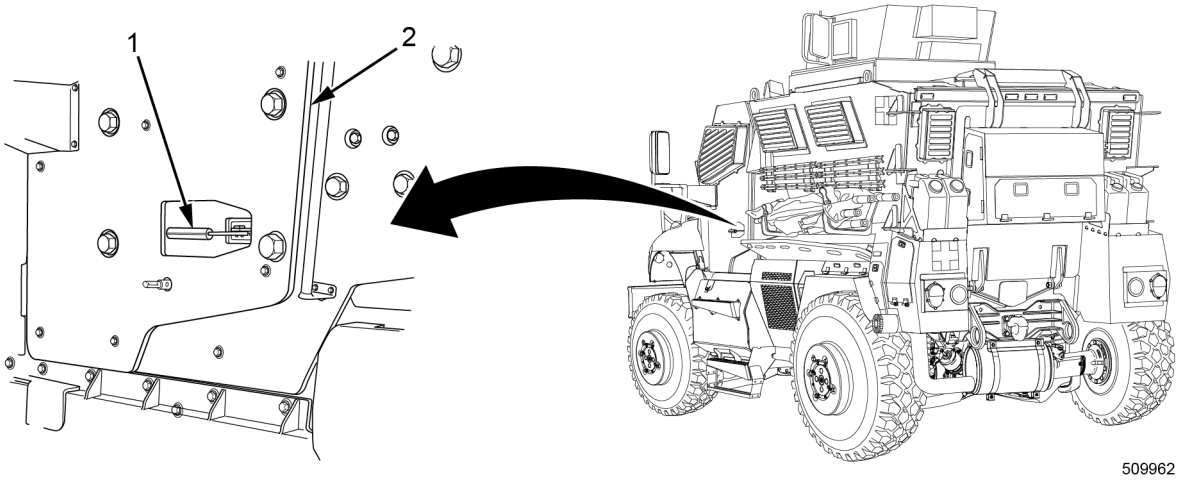


Figure 1. Side Door Open.

1. Pull on exterior door handle (Figure 1, Item 1) with steady pressure to open side door (Figure 1, Item 2).

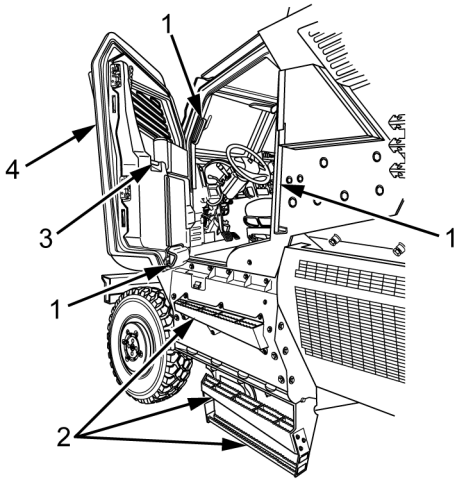


Figure 2. Driver Side Grab Handles, Steps, and Interior Door Handle.

2. Use grab handles (Figure 2, Item 1) and steps (Figure 2, Item 2) to enter driver side of cabin.
3. Pull on interior door handle (Figure 2, Item 3) with steady pressure to close driver side door (Figure 2, Item 4).

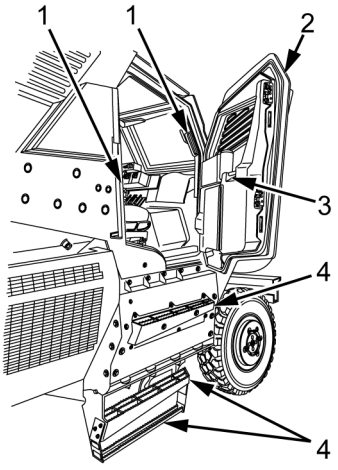


Figure 3. Commander Side Grab Handles, Steps, and Interior Door Handle.

4. Use grab handles (Figure 3, Item 1) and steps (Figure 3, Item 4) to enter commander side of cabin.
5. Pull on interior door handle (Figure 3, Item 3) with steady pressure to close commander side door (Figure 3, Item 2).

END OF TASK

OPERATING PROCEDURES

Side Door Lock

NOTE

Use combat locks in accordance with standard operating procedures.

Driver side shown; commander side similar.

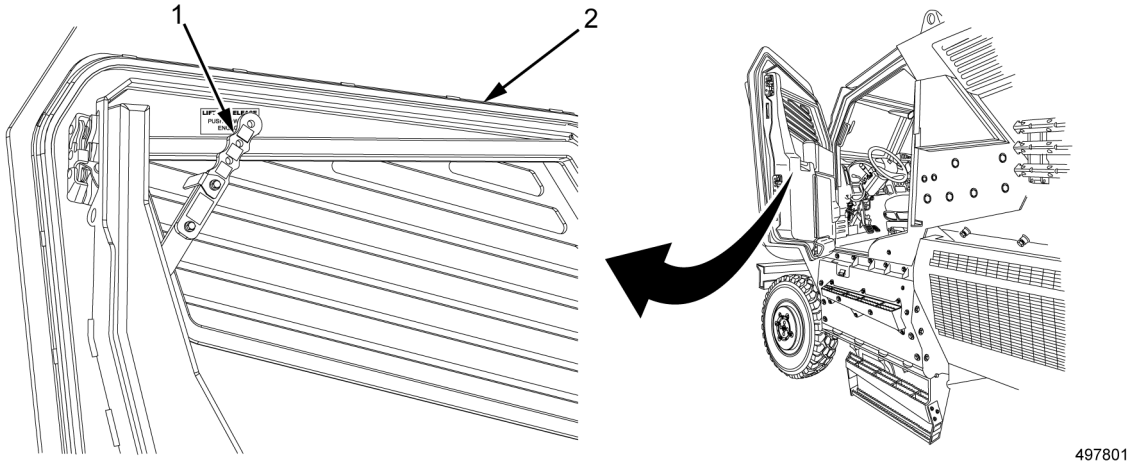


Figure 4. Driver Side Combat Lock.

1. Pull combat lock (Figure 4, Item 1) down to lock side door (Figure 4, Item 2).

END OF TASK

OPERATING PROCEDURES

Side Door Unlock

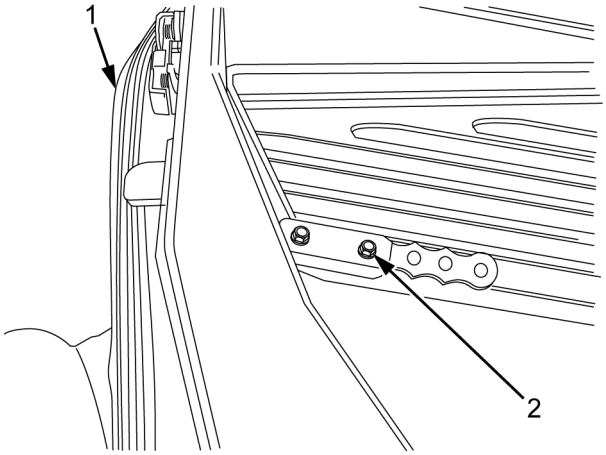


Figure 5. Diver Side Combat Lock.

NOTE

Side door shown in open position so combat lock latch is visible.

1. Push combat lock (Figure 5, Item 2) up to unlock side door (Figure 5, Item 1).

END OF TASK

OPERATING PROCEDURES

Side Door Exit

WARNING

To prevent falls from the sides, rear, or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

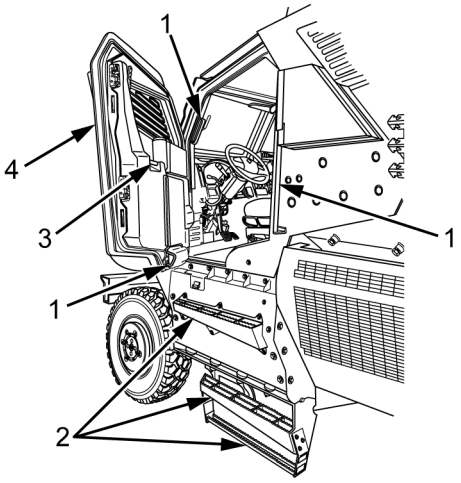


Figure 6. Driver Side Grab Handles, Steps, and Interior Door Handle.

1. When exiting vehicle from driver side of cabin, push on interior door handle (Figure 6, Item 3) to open side door (Figure 6, Item 4).
2. Exit driver side of cabin using grab handles (Figure 6, Item 1) and steps (Figure 6, Item 2).

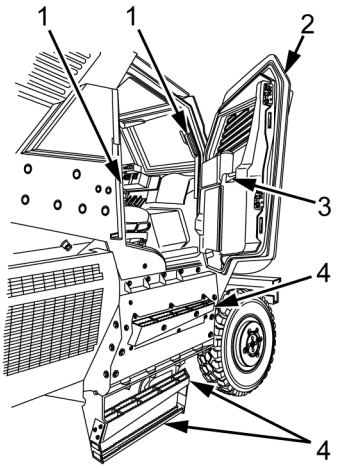


Figure 7. Commander Side Grab Handles, Steps, and Interior Door Handle.

3. When exiting vehicle from commander side of cabin, push on interior door handle (Figure 7, Item 3) to open commander side door (Figure 7, Item 2).
4. Exit commander side of cabin using grab handles (Figure 7, Item 1) and steps (Figure 7, Item 4).

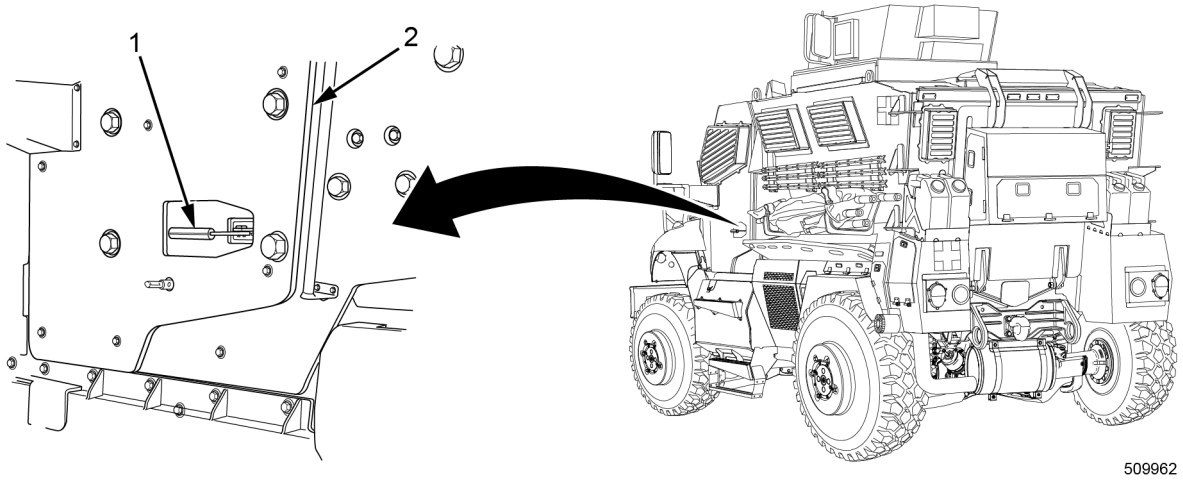


Figure 8. Side Door Close.

5. Push exterior door handle (Figure 8, Item 1) to close side door (Figure 8, Item 2).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - DRIVER SEAT ADJUSTMENT

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

Seat Adjustment

WARNING

Do not stow material under seats. Under-seat area is not designated for stowage, and improper use may lead to seat failure during a blast event. Failure to comply may result in death or injury to personnel.

Do not modify seats or seat attachments, or hang gear on seats. Failure to comply may lead to seat failure during a blast event resulting in death or injury to personnel.

NOTE

The operator should be able to easily reach the brake pedal, the accelerator control, and the Instrument Panel (IP) controls with the seat adjusted and with the seat belt and shoulder harness on.

Driver seat shown; commander seat similar.

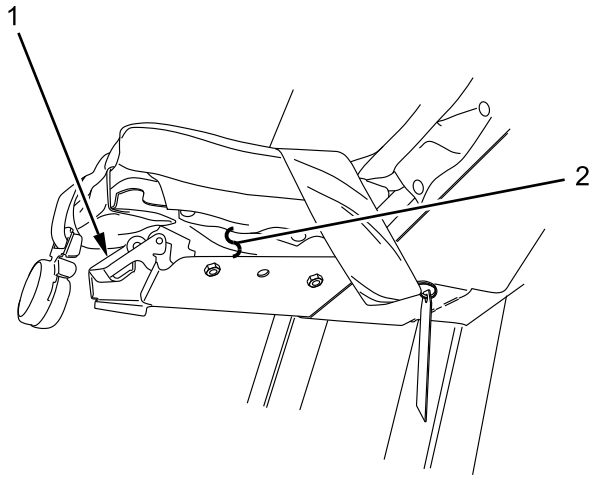


Figure 1. Driver Seat Adjustment Lever.

1. Lift seat adjustment lever (Figure 1, Item 1) up to release seat (Figure 1, Item 2).
2. Slide seat (Figure 1, Item 2) forward or backward.
3. Release seat adjustment lever (Figure 1, Item 1) to lock seat (Figure 1, Item 2) into desired position.

END OF TASK

OPERATING PROCEDURES

Headrest Adjustment

WARNING

Do not adjust headrest while operating vehicle. Failure to comply may result in injury or death to personnel.

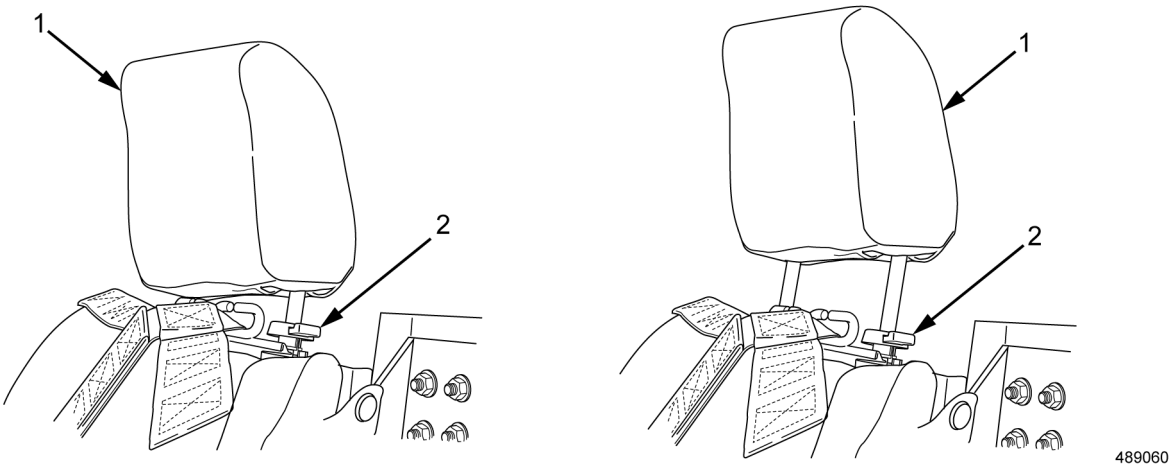


Figure 2. Headrest Adjustment Lever.

1. Push headrest adjustment lever (Figure 2, Item 2) in and pull up or push down on headrest (Figure 2, Item 1) to reach desired position.
2. Release headrest adjustment lever (Figure 2, Item 2) to lock headrest (Figure 2, Item 1) in desired position.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - PASSENGER SEAT ADJUSTMENT

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)

OPERATING PROCEDURES

Fold Seat

WARNING

Under seat area is designated for stowage of properly packaged medical equipment only. Always ensure medical equipment stowed under seat is properly retained with stowage nets. Improper use may lead to seat failure during a blast event. Failure to comply may result in death or injury to personnel.

Do not modify seats or seat attachments, or hang gear on seats. Failure to comply may lead to seat failure during a blast event resulting in death or injury to personnel.

Keep feet off ribs during transit when there is an Improvised Explosive Device (IED) threat. Failure to comply may result in serious injury or death to personnel.

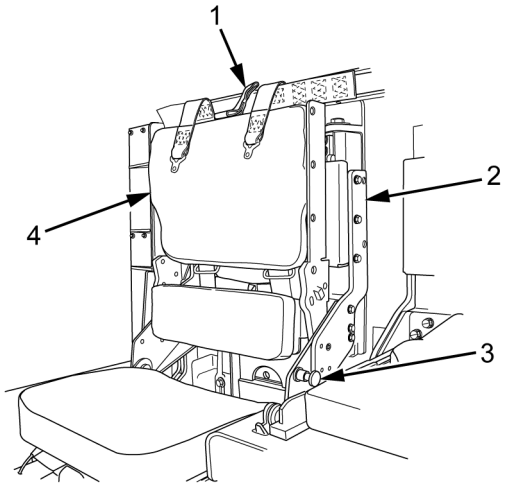


Figure 1. Passenger Seat Release.

1. Pull center strap upward (Figure 1, Item 1) to release seat back (Figure 1, Item 4) from seat bracket (Figure 1, Item 2).
2. Pull lock pin (Figure 1, Item 3) and fold seat back (Figure 1, Item 4) down.

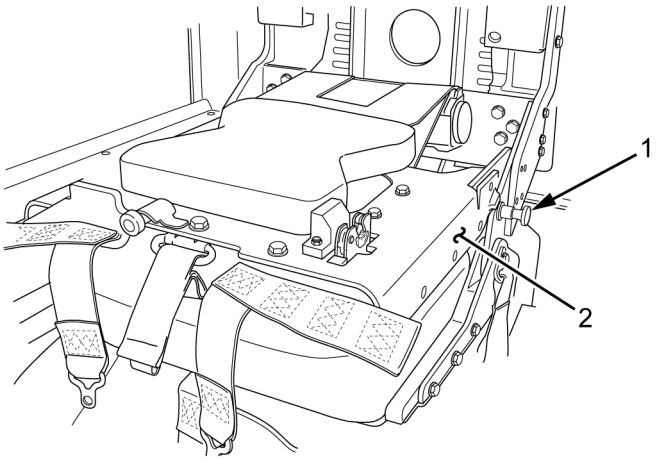


Figure 2. Passenger Seat Lock.

3. Release lock pin (Figure 2, Item 1) to secure seat back (Figure 2, Item 2).

END OF TASK

OPERATING PROCEDURES

Unfold Seat

1. Pull lock pin (Figure 2, Item 1) and lift seat back (Figure 2, Item 2) upward.
2. Release lock pin (Figure 2, Item 1).

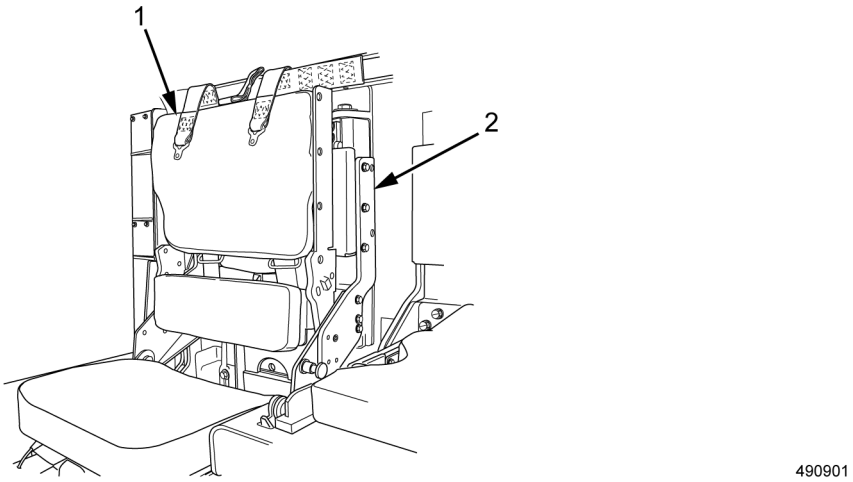


Figure 3. Passenger Seat.

3. Push seat back (Figure 3, Item 1) firmly against seat bracket (Figure 3, Item 2) until locked.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - MEDIC SEAT ADJUSTMENT

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine shutdown (WP 0013)

OPERATING PROCEDURES

Seat Back Adjustment

WARNING

Do not stow material under medic seat. Under-seat area is not designated for stowage, and improper use may lead to seat failure during a blast event. Failure to comply may result in death or injury to personnel.

Do not modify seats or seat attachments, or hang gear on seats. Failure to comply may lead to seat failure during a blast event resulting in death or injury to personnel.

Keep feet off ribs during transit when there is an Improvised Explosive Device (IED) threat. Failure to comply may result in serious injury or death to personnel.

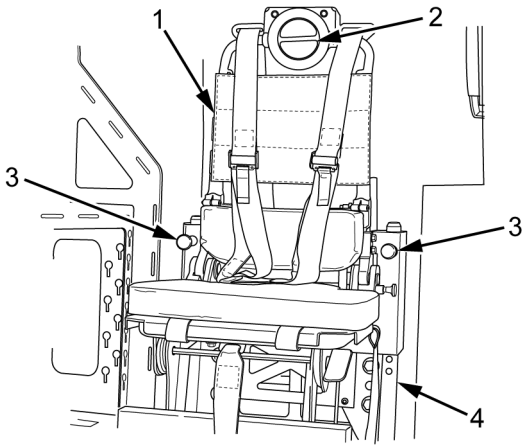


Figure 1. Medic Seat Release and Adjustment.

NOTE

Seat back does not lock in down position.

1. Rotate handle (Figure 1, Item 2) clockwise or counterclockwise and pull to release back of seat (Figure 1, Item 1) for egress.

END OF TASK

OPERATING PROCEDURES

Seat Height Adjustment

1. Pull height adjustment knobs (Figure 1, Item 3) from slide bar (Figure 1, Item 4) to raise and lower seat (Figure 1, Item 1) to desired position.
2. Release height adjustment knobs (Figure 1, Item 3) to lock in slide bar (Figure 1, Item 4).

END OF TASK

OPERATING PROCEDURES

Raise Seat Bottom

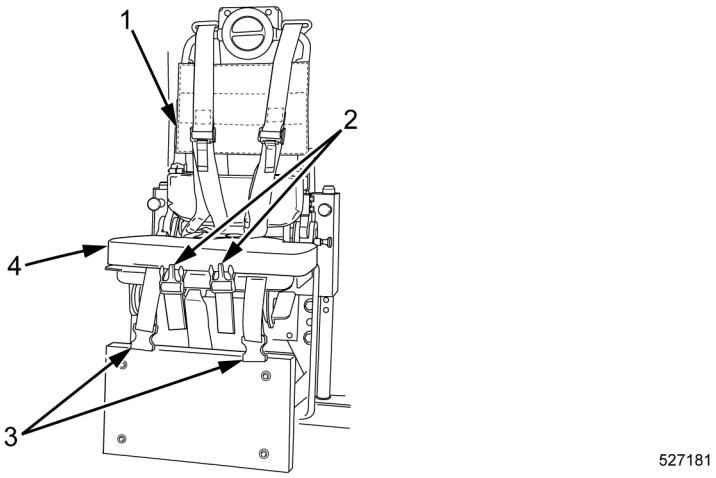


Figure 2. Cushion Strap Latches and Strap Ends.

1. Unbuckle two cushion strap latches (Figure 2, Item 2) from strap ends (Figure 2, Item 3).
2. Remove cushion (Figure 2, Item 4) from seat (Figure 2, Item 1).

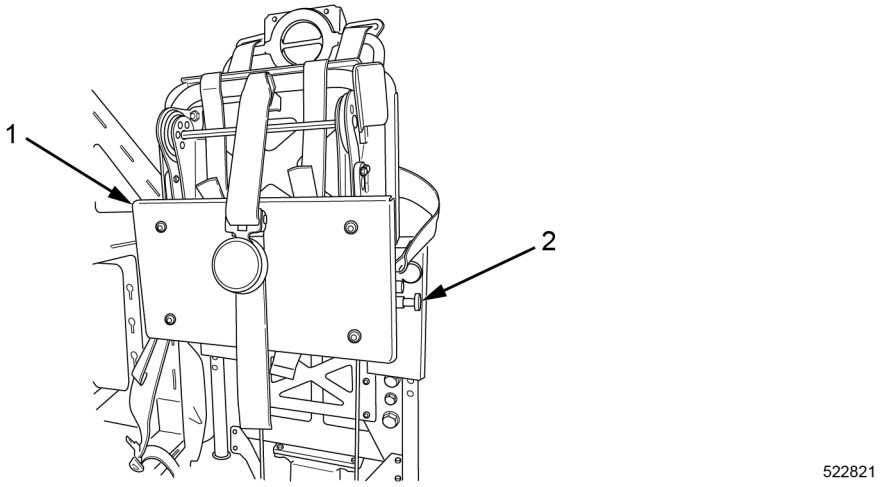


Figure 3. Medic Seat Bottom in Stowed Position.

3. Pull lock (Figure 3, Item 2) and fold seat bottom (Figure 3, Item 1) to stowed position.
4. Release lock (Figure 3, Item 2) to lock seat bottom (Figure 3, Item 1).

Lower Seat Bottom

1. Pull lock (Figure 3, Item 2) and lower seat bottom (Figure 3, Item 1) to resting position.
2. Release lock (Figure 3, Item 2) to lock seat bottom (Figure 3, Item 1).

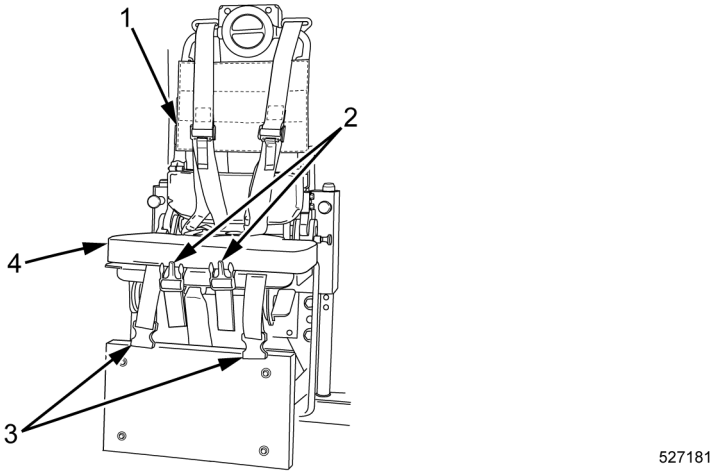


Figure 4. Cushion Strap Latches and Strap Ends.

3. Position cushion (Figure 4, Item 4) on seat (Figure 4, Item 1).
4. Buckle two cushion strap latches (Figure 4, Item 2) to strap ends (Figure 4, Item 3).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - SEAT BELT OPERATION

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

WARNING

Personnel must utilize seat restraints, and each occupant must ensure that their seat restraint is properly fastened and adjusted. Avoid twisting the straps when putting the seat belt on and be sure to remove slack so the harness provides maximum protection in the event of an accident. Failure to comply may result in death or injury to personnel.

Keep feet off ribs during transit when there is an Improvised Explosive Device (IED) threat. Failure to comply may result in serious injury or death to personnel.

Driver/Commander Seat Belt Buckle

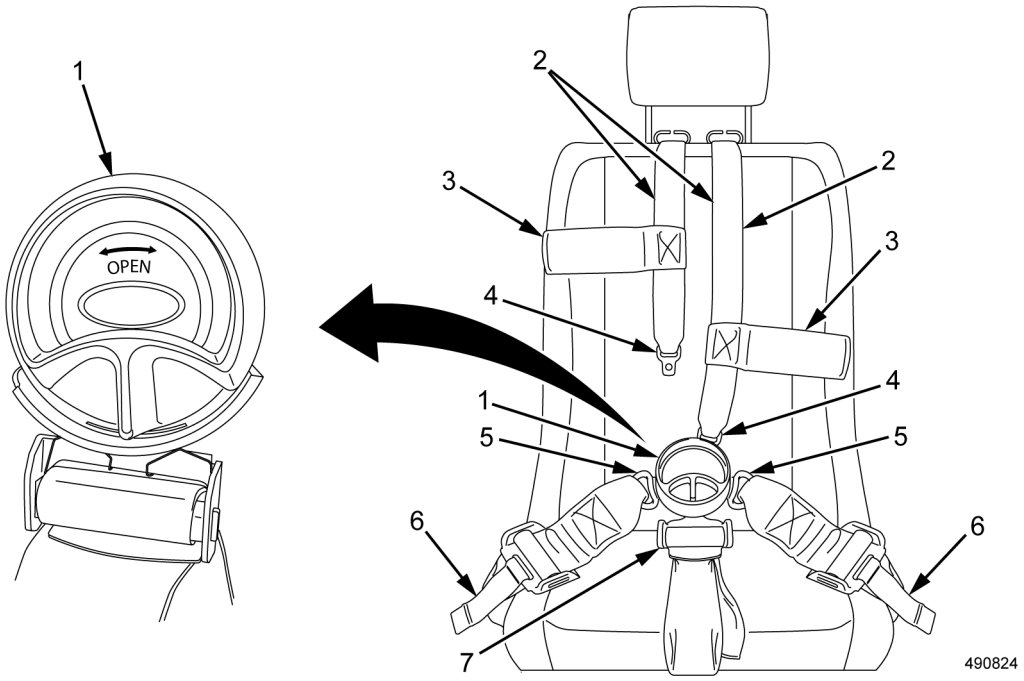


Figure 1. Driver and Commander Seat Belt Operation.

NOTE

Driver and commander seat belts operate the same way.

1. Lift buckle (Figure 1, Item 1) up between legs.
2. Insert two latches (Figure 1, Item 5) into buckle (Figure 1, Item 1).
3. Adjust strap adjusters (Figure 1, Item 6 and Item 7) as desired for snug fit.
4. Place shoulder straps (Figure 1, Item 2) over shoulders.
5. Insert two latches (Figure 1, Item 4) into buckle (Figure 1, Item 1).

END OF TASK

OPERATING PROCEDURES

Driver/Commander Seat Unbuckle

1. Rotate buckle (Figure 1, Item 1) clockwise or counterclockwise and remove four latches (Figure 1, Item 4 and Item 5).
2. Remove shoulder straps (Figure 1, Item 2).

END OF TASK

OPERATING PROCEDURES

Passenger Seat Belt Buckle

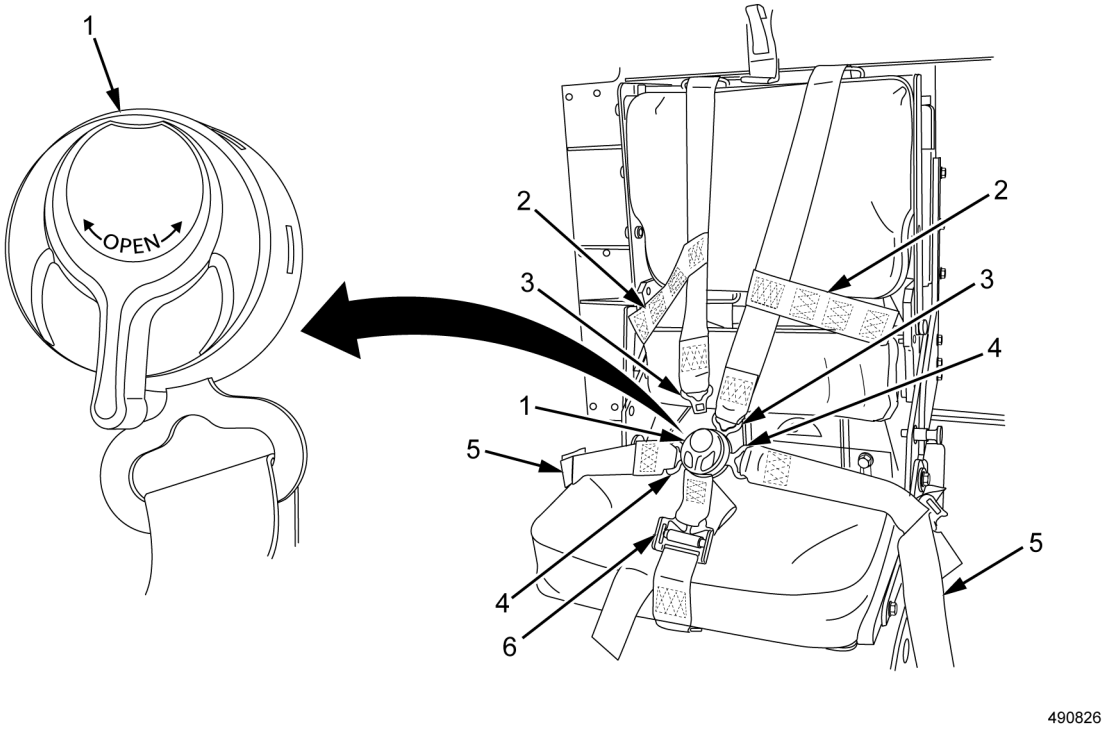


Figure 2. Passenger Seat Belt.

1. Lift buckle (Figure 2, Item 1) up between legs.
2. Insert two latches (Figure 2, Item 4) into buckle (Figure 2, Item 1).
3. Adjust strap adjusters (Figure 2, Item 5 and Item 6) as desired for snug fit.
4. Place shoulder straps (Figure 2, Item 2) over shoulders.
5. Insert two latches (Figure 2, Item 3) into buckle (Figure 2, Item 1).

END OF TASK

OPERATING PROCEDURES

Passenger Seat Unbuckle

1. Rotate buckle (Figure 2, Item 1) clockwise or counterclockwise and remove four latches (Figure 2, Item 3 and Item 4).
2. Remove shoulder straps (Figure 2, Item 2).

END OF TASK

OPERATING PROCEDURES

Medic Seat Belt Buckle

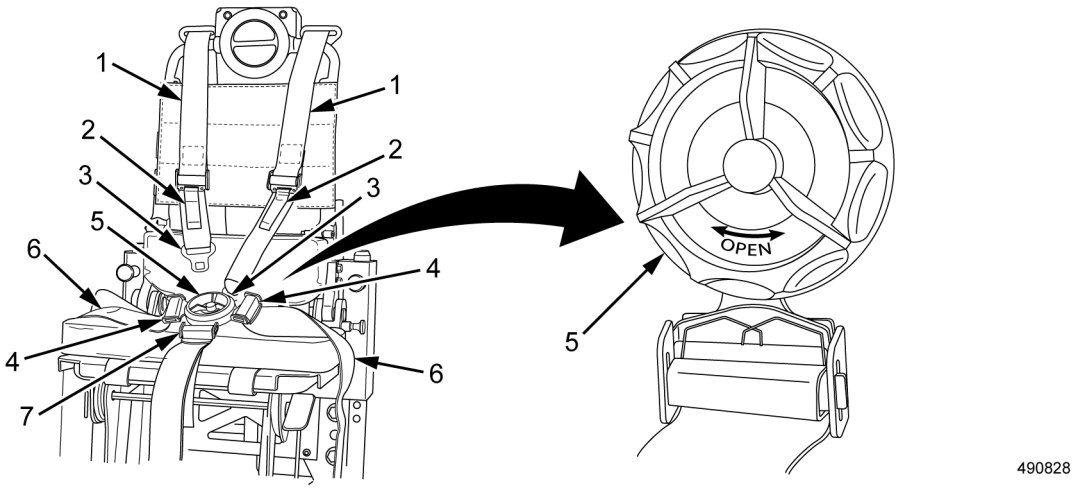


Figure 3. Medic Seat Belt.

1. Lift buckle (Figure 3, Item 5) up between legs.
2. Insert two latches (Figure 3, Item 4) into buckle (Figure 3, Item 5).
3. Adjust strap adjusters (Figure 3, Item 6 and Item 7) as desired for snug fit.
4. Place shoulder straps (Figure 3, Item 1) over shoulders.
5. Insert two latches (Figure 3, Item 3) into buckle (Figure 3, Item 5).
6. Adjust strap adjusters (Figure 3, Item 2) as desired for snug fit.

END OF TASK

OPERATING PROCEDURES

Medic Seat Belt Unbuckle

1. Rotate buckle (Figure 3, Item 5) clockwise or counterclockwise and remove four latches (Figure 3, Item 3 and Item 4).
2. Remove shoulder straps (Figure 3, Item 1).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - STEERING WHEEL ADJUSTMENT

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

WARNING

Ensure steering wheel tilt adjustment lever is in locked (neutral) position before driving vehicle. Do not adjust tilt or height of steering wheel while operating vehicle. Failure to comply may result in injury or death to personnel.

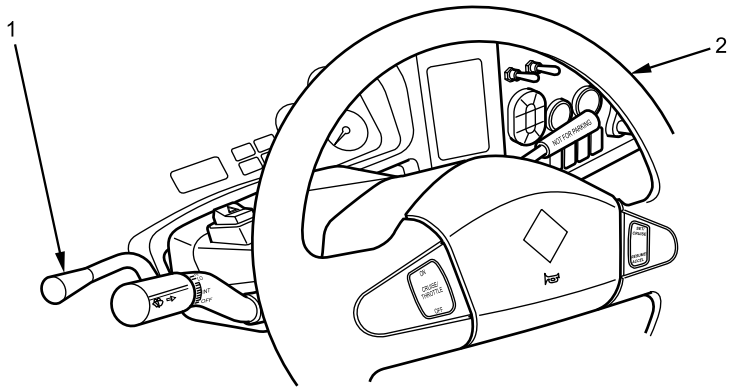


Figure 1. Steering Wheel Tilt Adjustment Lever.

1. Pull steering wheel tilt adjustment lever (Figure 1, Item 1) towards steering wheel (Figure 1, Item 2).
2. Position steering wheel (Figure 1, Item 2) up or down.
3. Release steering wheel tilt adjustment lever (Figure 1, Item 1) when adjustment is complete.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - ENGINE START PROCEDURE - ABOVE 32°F (0°C)

INITIAL SETUP:

References
WP 0045
WP 0077

Equipment Condition
Engine shutdown (WP 0013)
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)

OPERATING PROCEDURES

Engine Start

WARNING

Be alert at all times for the smell of fuel. Hot engine and components can ignite fuel. If fuel smell is detected while operating vehicle, shut down vehicle immediately. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

CAUTION

Do not apply pressure to accelerator pedal before attempting to start engine. This will make the engine harder to start and may result in a no-start condition. Failure to comply may result in damage to equipment.

NOTE

If temperature is below 32°F (0°C), refer to WP 0045, Operation Under Unusual Conditions – Extreme Cold Starting (Below 32°F [0°C]).

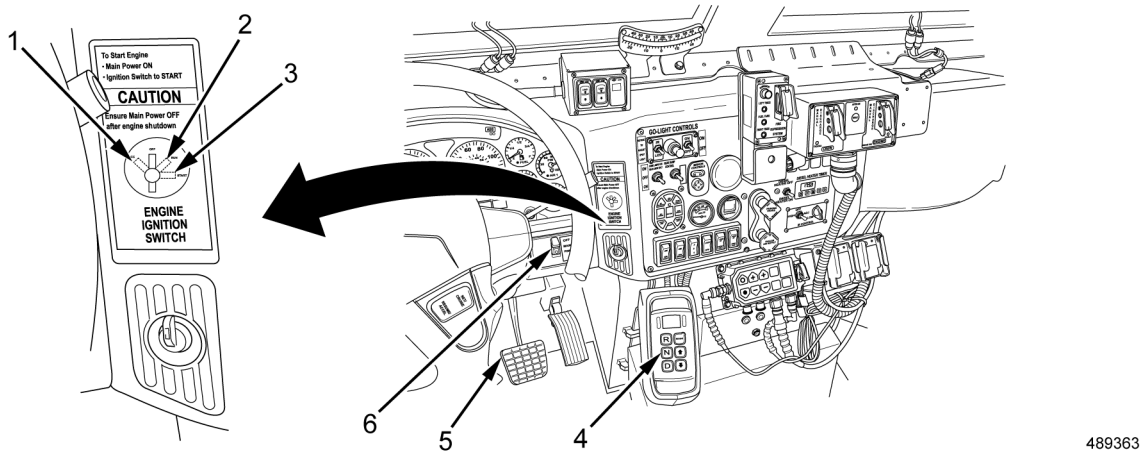


Figure 1. Engine Starting.

1. Apply service brake (Figure 1, Item 5).

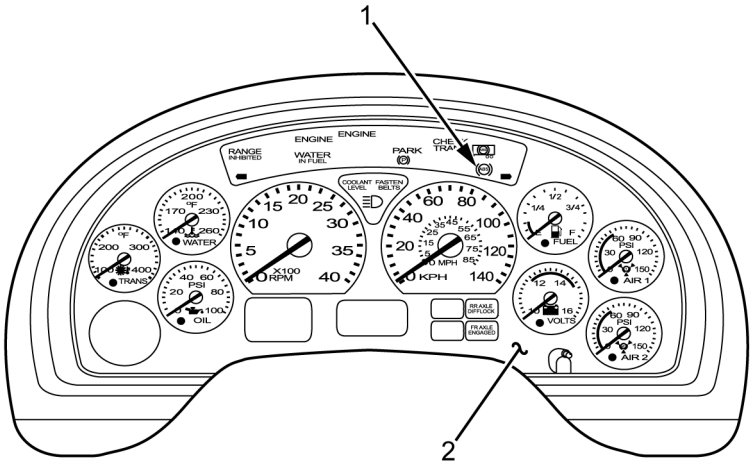


Figure 2. IP Cluster.

NOTE

Built-in-Test (BIT) is complete when gauges and indicators on Instrument Panel (IP) cluster illuminate, sweep right, sweep left, and darken.

2. While watching IP cluster (Figure 2, Item 2), turn MAIN POWER switch (Figure 1, Item 6) ON. Wait for IP cluster to complete BIT.

NOTE

When ignition switch is set to RUN, Anti-Lock Braking System (ABS) indicator will illuminate for only 5 or 6 seconds indicating air brake system is performing BIT.

BIT is complete when ABS sensors complete cycle. Eight audible bursts of air and/or clicks are heard.

3. Turn ignition switch (Figure 1, Item 1) to RUN (Figure 1, Item 2). ABS indicator (Figure 2, Item 1) illuminates and then turns off.
4. Verify transmission is in NEUTRAL (N) on transmission gear selector (Figure 1, Item 4).

CAUTION

To avoid engine damage, if engine fails to start after 30 seconds, release ignition switch and wait 2 to 3 minutes to allow starter motor to cool. Repeated attempts to start engine will damage starter motor.

5. Turn and hold ignition switch (Figure 1, Item 1) to START (Figure 1, Item 3) until engine starts, but for no longer than 30 seconds.
6. Release ignition switch (Figure 1, Item 1) as soon as engine starts. Engine will continue to run with ignition switch in RUN (Figure 1, Item 2).

END OF TASK

OPERATING PROCEDURES

Engine Warm-Up

NOTE

An audible alarm will sound when SER. DRIVE and ENTER are selected on Master Vehicle Light Switch (MVLS) until air system pressure reaches 70 psi (483 kPa).

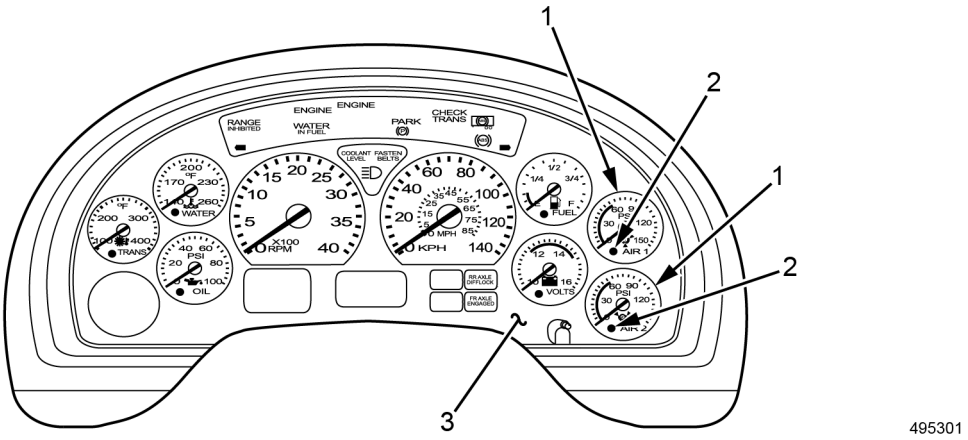


Figure 3. IP Cluster.

1. Check both AIR pressure gauges (Figure 3, Item 1) on IP cluster (Figure 3, Item 3) during startup and idle. AIR pressure gauge RED indicator lights (Figure 3, Item 2) will illuminate when starting engine. As air pressure reaches 70 psi (483 kPa), AIR pressure gauge RED indicator lights (Figure 3, Item 2) will go out.

CAUTION

Prolonged idling of the engine at low idle can reduce performance. Once engine oil pressure has reached 31 psi (214 kPa), use throttle control system to increase engine idle if the vehicle is stationary for more than 2 minutes. Failure to comply may result in damage to equipment.

2. Idle engine to allow air system pressure to build until both AIR pressure gauges (Figure 3, Item 1) on IP cluster (Figure 3, Item 3) reach normal operating range of 110 to 130 psi (758–896 kPa).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - NORMAL DRIVING PROCEDURE

INITIAL SETUP:

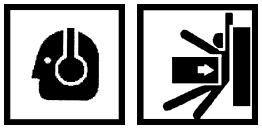
Materials/Parts
Plugs, ear (WP 0110, Item 24)

References
WP 0002
WP 0016

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

OPERATING PROCEDURES

WARNING



Noise levels exceed 85-decibel limit. Exposure to constant, elevated noise levels could cause permanent hearing damage. Single hearing protection is required in and around operating vehicle. Double hearing protection is required during weapons firing. Failure to comply may result in injury to personnel.

The driver's field of view is limited. Ensure that the mirrors are positioned so as to allow for a maximum range of vision prior to vehicle operation. Ground Guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of the vehicle and remain within view of the driver. Failure to comply may lead to a vehicle collision/accident resulting in injury or death to personnel and/or damage to equipment

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Driver must visually check to make sure all areas of the vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury and/or death to personnel.

Personnel must utilize seat restraints, and each occupant must ensure that their seat restraint is properly fastened and adjusted. Avoid twisting the straps when putting the seat belt on and be sure to remove slack so the harness provides maximum protection in the event of an accident. Failure to comply may result in injury or death to personnel.

To prevent falls from the sides, rear or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

Do not use steering wheel as hand grip to enter or exit vehicle cab. Use of steering wheel for hand grip may cause sudden violent jerking of vehicle or damage to adjustable steering wheel bearing. When entering or exiting cab, use three-point contact system. Failure to comply may result in injury or death to personnel and/or damage to equipment.

Do not exceed the rated payload of the vehicle. This will result in overloading of axles and degradation of brakes that may lead to an accident. Failure to comply may cause injury or death to personnel and/or damage to equipment.

Air inlet must be open and the ventilation system must be circulating fresh or recirculated air within the vehicle. Operation with inadequate ventilation (ventilation system set improperly) could create an oxygen deficient atmosphere, which could lead to occupant incapacitation. Failure to comply could lead to serious injury to personnel.

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the Central Tire Inflation System (CTIS) Driver Display Module (DDM) can help identify a tire problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoids side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

Let air pressure build in both tanks to 110 to 130 psi (758 to 896 kPa) before releasing the parking brake. Do not operate vehicle with air pressure system loss. Low air pressure may affect vehicle braking capability. Failure to comply may result in injury or death to personnel.

Keep feet off ribs during transit when there is an Improvised Explosive Device (IED) threat. Failure to comply may result in serious injury or death to personnel.

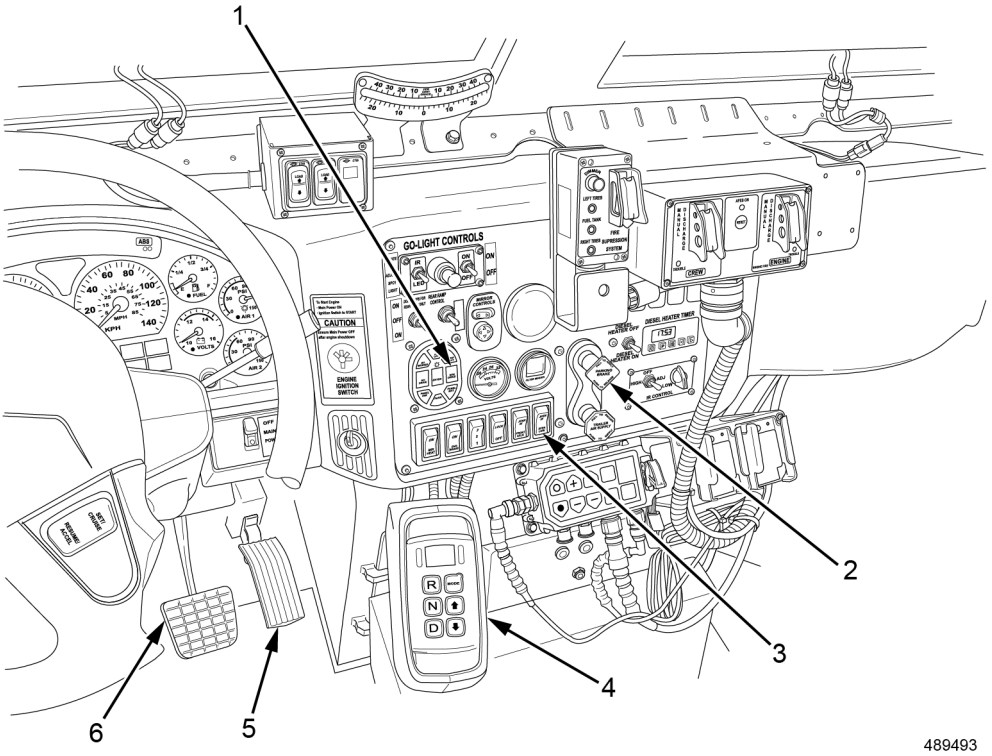


Figure 1. Operating Controls.

NOTE

Refer to WP 0002, Equipment Description and Data for payload limitations.

1. Press SER. DRIVE and ENTER on Master Vehicle Light Switch (MVLS) (Figure 1, Item 1) to activate all lights.
2. Apply service brake (Figure 1, Item 6).
3. Push XFER HI on XFER switch (Figure 1, Item 3).
4. Place transmission gear selector (Figure 1, Item 4) in DRIVE (D) or REVERSE (R). Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
5. Push YELLOW PARKING BRAKE knob (Figure 1, Item 2) IN to release parking brake.
6. Release service brake (Figure 1, Item 6).
7. Lightly press accelerator pedal (Figure 1, Item 5).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - ENGINE SHUTDOWN

INITIAL SETUP:

Tools and Special Tools
Wheel chocks (WP 0108, Item 12)

References
WP 0009
WP 0028

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)
Parking brake released (WP 0012)
Transmission set in DRIVE (D) (WP 0012)

OPERATING PROCEDURES

WARNING

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in serious injury to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

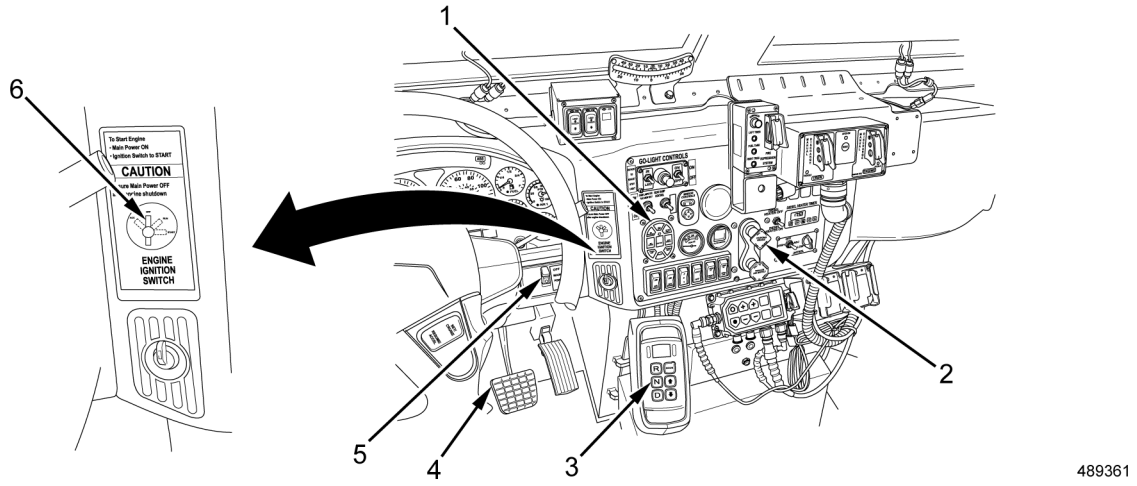


Figure 1. Engine Shutdown and Parking.

1. Apply service brake (Figure 1, Item 4) and completely stop vehicle.
2. Maintain pressure on service brake (Figure 1, Item 4).
3. Straighten wheels.
4. Place transmission gear selector in NEUTRAL (N) (Figure 1, Item 3).
5. Pull YELLOW PARKING BRAKE knob (Figure 1, Item 2) OUT to set parking brake.
6. Release service brake (Figure 1, Item 4).

CAUTION

Ensure to idle engine 3 to 5 minutes prior to shutting down to avoid excessive engine wear. Failure to comply may result in damage to equipment.

NOTE

Idling allows lubricating oil and coolant to carry heat away from vehicle components.

Accessories that should be turned include windshield wipers, front passenger lights, and rear passenger lights.

7. Turn Master Vehicle Light Switch (MVLS) (Figure 1, Item 1) OFF.
8. Turn Life Support System (LSS)/Heating, ventilation, and Air Condition (HVAC) switch OFF. Refer to WP 0028, Operation Under Usual Conditions - Life Support System (LSS)/Heating, Ventilation, and Air Conditioning (HVAC) Operation.
9. Turn ignition switch (Figure 1, Item 6) OFF to turn off engine.
10. Turn MAIN POWER switch (Figure 1, Item 5) OFF.
11. Remove seat belt. Refer to WP 0009, Operation Under Usual Conditions - Seat Belt Operation.

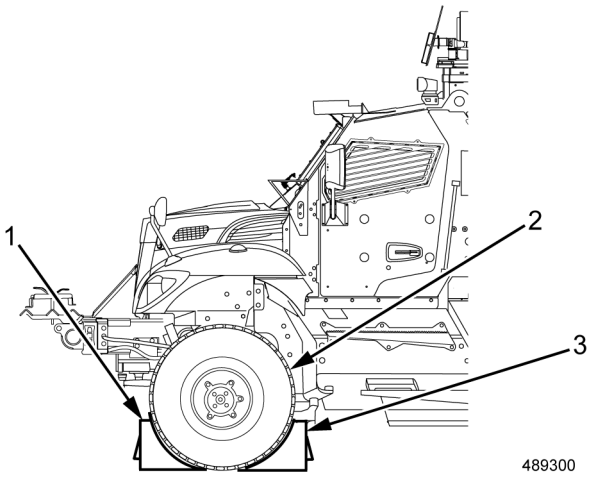


Figure 2. Wheel Chocks.

NOTE

Driver side front vehicle tire shown; all others similar.

12. Place wheel chocks (Figure 2, Item 1 and Item 3) in front and behind tire (Figure 2, Item 2).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - BRAKE SYSTEM AND ANTI-LOCK BRAKE SYSTEM (ABS) OPERATION

INITIAL SETUP:

References
WP 0071

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

OPERATING PROCEDURES

WARNING

Let air pressure build in both tanks to 110 to 130 psi (758 to 896 kPa) before releasing the parking brake. Do not operate vehicle with air pressure system loss. Low air pressure may affect vehicle braking capability. Failure to comply may result in injury or death to personnel

Check air brake system function while vehicle is on a firm level surface clear of personnel, buildings, and equipment. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Do not operate vehicle when brakes are caged. Caged brakes will result in loss of the parking brake and degrade braking system performance. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

NOTE

Normal air system operating pressure is 110 to 130 psi (758 to 896 kPa). If the operating pressure drops below approximately 70 psi (483 kPa), audible alarm will sound and RED indicator light illuminates.

The electronic Anti-lock Brake System (ABS) improves braking when excessive wheel slippage or wheel lockup is detected. When stopping suddenly, do not pump service brake pedal. Apply steady pressure. The ABS system will take over and apply extra pressure to the wheel or wheels that need it. This will result in a fast pulsation in the brake pedal. This is normal and not a concern.

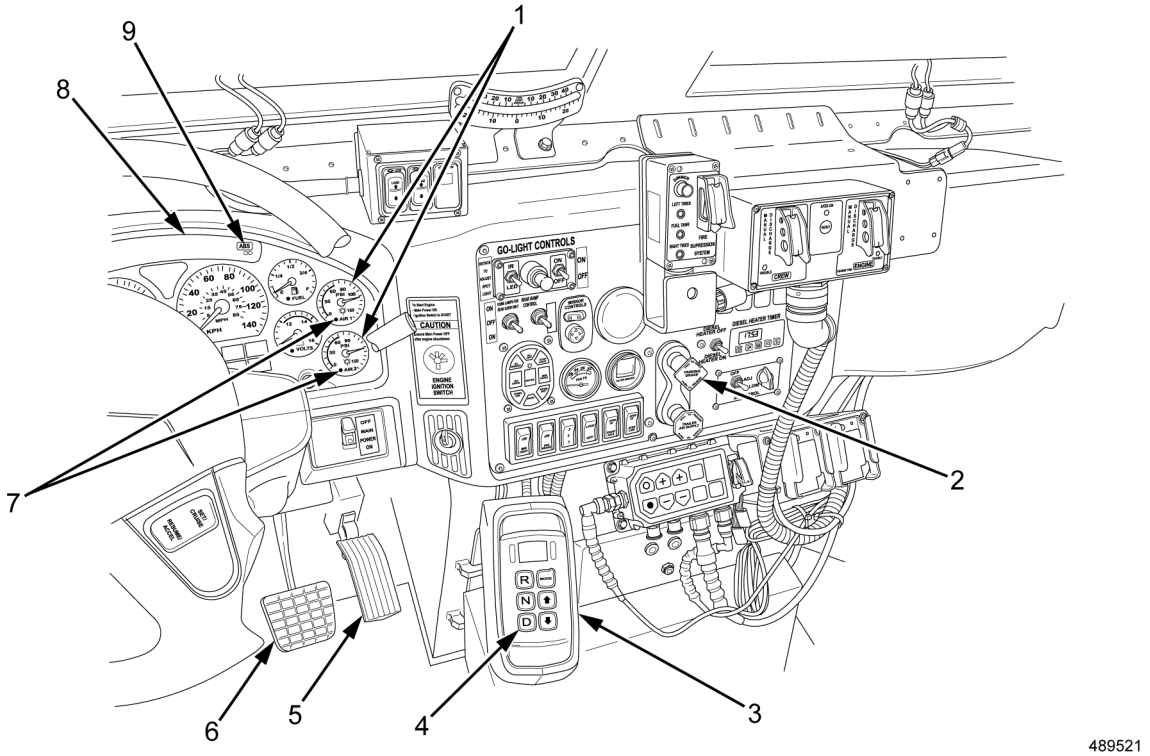


Figure 1. IP Gauges and Controls.

1. Apply service brake (Figure 1, Item 6).
2. Place transmission gear selector (Figure 1, Item 3) in DRIVE (D) (Figure 1, Item 4).
3. Push YELLOW PARKING BRAKE knob (Figure 1, Item 2) IN to release parking brake, and apply gentle pressure to accelerator pedal (Figure 1, Item 5) to ensure parking brake has released.
4. Apply service brake (Figure 1, Item 6) to ensure brake function.
5. If ABS monitor indicator light (Figure 1, Item 9) on Instrument Panel (IP) cluster (Figure 1, Item 8) illuminates and remains ON, notify Field Level Maintenance.
6. If AIR pressure gauges (Figure 1, Item 1) reach approximately 70 psi (483 kPa) or less, RED indicator lights (Figure 1, Item 7) will turn ON. Refer to WP 0071, Emergency Operation - Operating Vehicle During Loss of Air System Pressure.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - ENGINE BRAKE OPERATION

INITIAL SETUP:

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)
Vehicle in normal operation (WP 0012)

OPERATING PROCEDURES

Engine Brake Operation

WARNING

Never coast downhill. Service brakes alone should not be used to control speed on major downgrades. Failure to comply may result in serious injury or death to personnel.

NOTE

Engine brake control switch position 1 allows 33% engine braking, position 2 allows 66% engine braking, and position 3 allows 100% engine braking.

Engine brake is disabled when cruise control is activated.

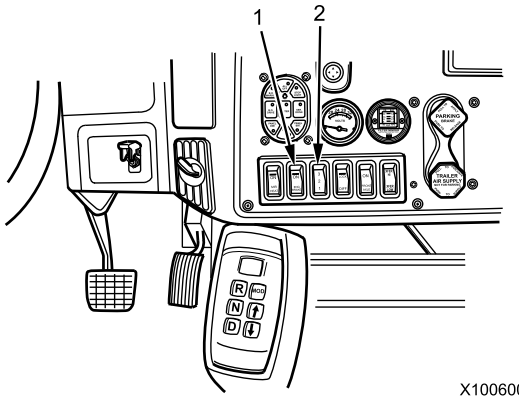


Figure 1. ENG BRAKE and Engine Brake Control Switches.

1. Turn ENG BRAKE switch (Figure 1, Item 1) ON.
2. Select position 1, 2, or 3 from engine brake control switch (Figure 1, Item 2).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - TRANSMISSION OPERATION

INITIAL SETUP:

References
WP 0004
WP 0068

Equipment Condition
Drive seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)
Wheel chocks removed (WP 0012)

OPERATING PROCEDURES

WARNING

The transmission will engage without the application of the service brake and the parking brake. Ensure service brake is applied when shifting the transmission from NEUTRAL (N) into any gear. Failure to comply may result in injury or death to personnel and/or damage to equipment.

CAUTION

During operation, if CHECK TRANS warning light comes on, do not shift transmission into NEUTRAL (N). Refer to WP 0068, Emergency Operation - Transmission Procedures (LIMP Mode). Failure to comply may result in damage to equipment.

NOTE

Gear selection is also displayed on the odometer display within the Instrument Panel (IP) cluster. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

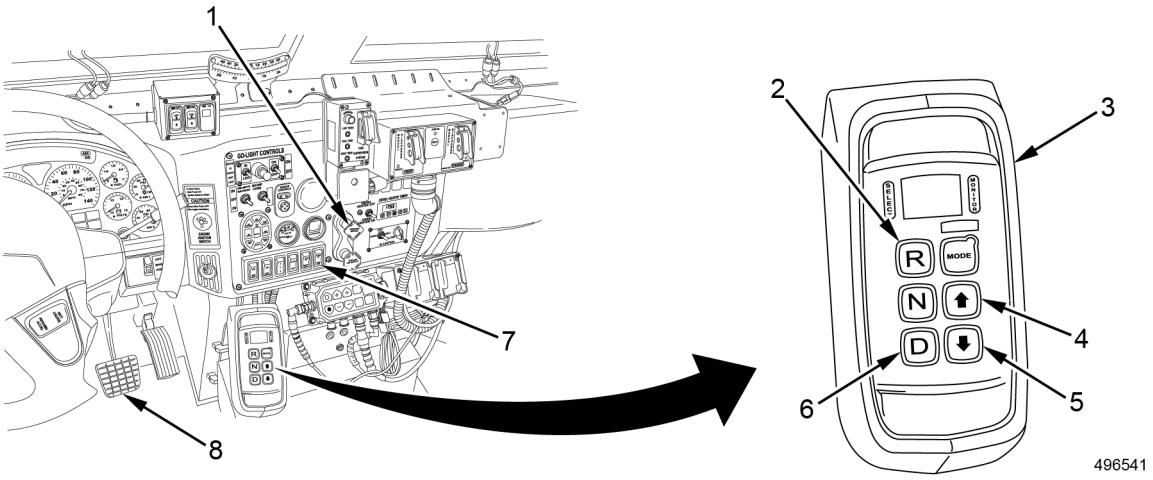


Figure 1. Transmission Controls.

1. Apply service brake (Figure 1, Item 8).
2. Push XFER HI on XFER switch (Figure 1, Item 7).
3. Place transmission gear sear selector (Figure 1, Item 3) in DRIVE (D) (Figure 1, Item 6) or REVERSE (R) (Figure 1, Item 2).
4. Push YELLOW PARKING BRAKE knob (Figure 1, Item 1) IN to release parking brake.
5. Release service brake (Figure 1, Item 8).
6. When in DRIVE (D), press and release UP arrow button (Figure 1, Item 4) to upshift transmission.
7. When in DRIVE (D), press and release the DOWN arrow button (Figure 1, Item 5) to downshift transmission.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - FOUR-WHEEL DRIVE OPERATION

INITIAL SETUP:

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

OPERATING PROCEDURES

Engage

CAUTION

Vehicle must be completely stopped, with transmission in NEUTRAL (N) and parking brake applied, before shifting between rear-wheel and four-wheel drive or shifting range in either mode. Failure to comply may result in damage to equipment.

Maximum recommended speed for four-wheel drive operations is 45 mph (72 kph). Exceeding maximum recommended speed can cause engine and transmission overheating. Return to rear-wheel mode as soon as conditions allow. Failure to comply may result in damage to equipment.

NOTE

When conditions warrant, such as on a grade with mud/sand/snow or when fording, it is likely that four-wheel drive or a lower range will be needed to complete the required task.

If it is known that a certain mode is required to negotiate a given terrain or discrete obstacle, the operator should set the vehicle in that mode before approaching the area. This will minimize damage to terrain and risk of vehicle damage or immobilization.

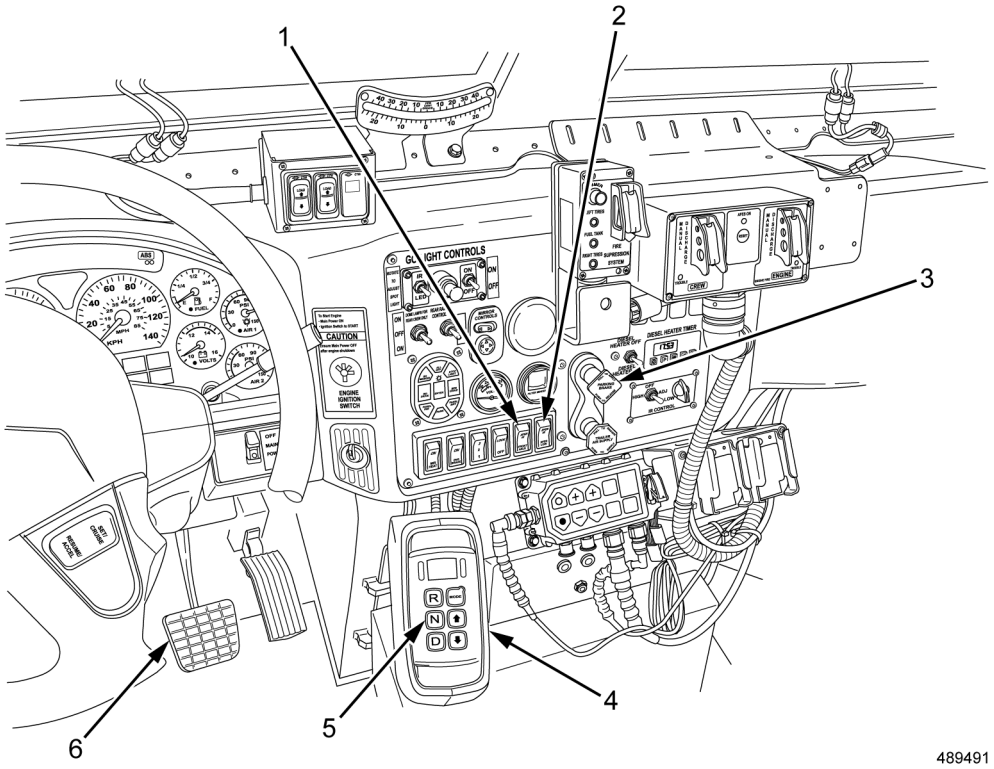


Figure 1. FRONT AXLE and XFER Switches.

NOTE

XFER HI is for normal four-wheel operation. XFER LO provides maximum traction.

1. Apply service brake (Figure 1, Item 6) while vehicle is stopped.
2. Place transmission gear selector (Figure 1, Item 4) in NEUTRAL (N) (Figure 1, Item 5).
3. Pull YELLOW PARKING BRAKE knob (Figure 1, Item 3) OUT to engage parking brake.
4. Push FRONT AXLE switch (Figure 1, Item 1) ON.
5. Push XFER HI or XFER LO on XFER switch (Figure 1, Item 2).
6. Place transmission gear selector (Figure 1, Item 4) in desired gear.
7. Push YELLOW PARKING BRAKE knob (Figure 1, Item 3) IN to release parking brake.
8. Release service brake (Figure 1, Item 6).
9. Resume driving vehicle.

END OF TASK

OPERATING PROCEDURES

Disengage

1. Apply service brake (Figure 1, Item 6) while vehicle is stopped.
2. Place transmission gear selector (Figure 1, Item 4) in NEUTRAL (N) (Figure 1, Item 5).
3. Pull YELLOW PARKING BRAKE knob (Figure 1, Item 3) OUT to engage parking brake.
4. Push XFER HI or XFER LO on XFER switch (Figure 1, Item 2).
5. Push FRONT AXLE switch (Figure 1, Item 1) OFF.
6. Place transmission gear selector (Figure 1, Item 4) in desired gear.
7. Push YELLOW PARKING BRAKE knob (Figure 1, Item 3) IN to release parking brake.
8. Release service brake (Figure 1, Item 6).
9. Resume driving vehicle.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - REAR DOOR/RAMP OPERATION

INITIAL SETUP:

Personnel Required
Crewmember - (2)

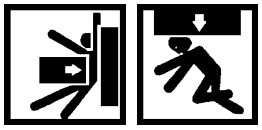
References
WP 0004
WP 0061

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

Rear Door/Ramp Operation - Cabin

WARNING



Ensure no one is behind vehicle when lowering rear door/ramp. Use extreme caution when using emergency rear door/ramp release to ensure that no one is struck by door as it falls open. Sound horn before lowering rear door/ramp. Do not operate rear door/ramp while vehicle is in motion. Failure to comply may result in serious injury or death to personnel.

Ensure plunger is in center position before operating rear door/ramp. Failure to place plunger in center position will result in abnormal operation and/or failure to operate. Failure to comply may result in serious injury to personnel and/or damage to equipment.

Never touch any part of a hydraulic assembly before ensuring system is depressurized. The rear door/ramp actuating system operates under high pressure. Pressurized hydraulic fluid can penetrate skin and body tissue. Contact with pressurized hydraulic fluid requires prompt medical attention, even if an injury is not evident. Failure to comply may result in serious injury, amputation, or death to personnel.

NOTE

The rear door/ramp can be operated electrically or manually with or without the engine running. A manual emergency release procedure bypasses these systems in the event of failure or emergency. Refer to WP 0061, Emergency Operation - Rear Door/Ramp Emergency Release.

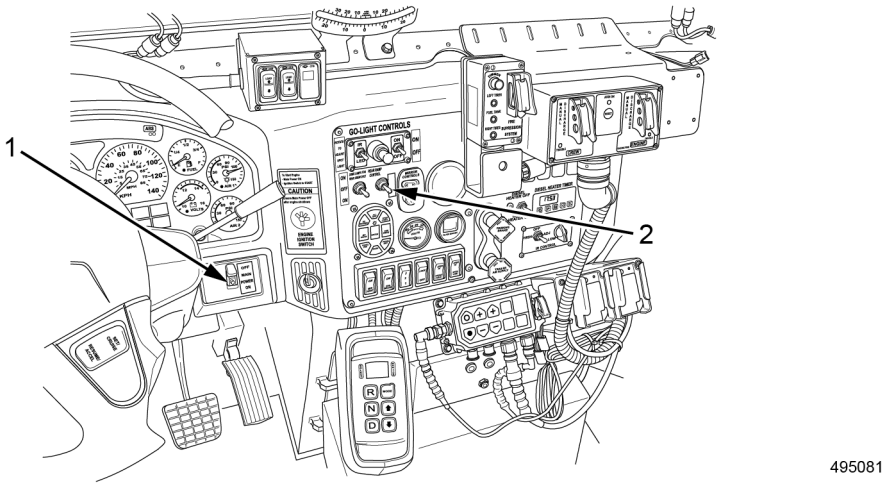


Figure 1. Cabin Rear Door/Ramp Toggle Switch.

1. Turn MAIN POWER switch (Figure 1, Item 1) ON.

CAUTION

Trolleys must be in stowed position and locked on trolley rail. Trolleys can bind trolley rail as rear door/ramp is raising. Failure to comply may result in damage to equipment.

Rear door/ramp toggle switch must be released when rear door/ramp is fully lowered or raised. Prolonged operation of the hydraulic pump after rear door/ramp has cycled completely will cause it to seize or burn out. Failure to comply may result in damage to equipment.

2. Driver sounds vehicle horn. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
3. Pull rear door/ramp toggle switch (Figure 1, Item 2) outward and hold in DOWN position to lower rear door/ramp (Figure 2, Item 3).
4. When rear door/ramp (Figure 2, Item 3) is fully lowered, release rear door/ramp toggle switch (Figure 1, Item 2).
5. Driver sounds vehicle horn. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
6. Pull rear door/ramp toggle switch (Figure 1, Item 2) outward and hold in UP position to raise rear door/ramp (Figure 2, Item 3).
7. Verify plunger (Figure 2, Item 4) is in center position.
8. When rear door/ramp (Figure 2, Item 3) is fully raised, release rear door/ramp toggle switch (Figure 1, Item 2).
9. Turn MAIN POWER switch (Figure 1, Item 1) OFF.

END OF TASK

OPERATING PROCEDURES

Rear Door/Ramp Operation - Passenger

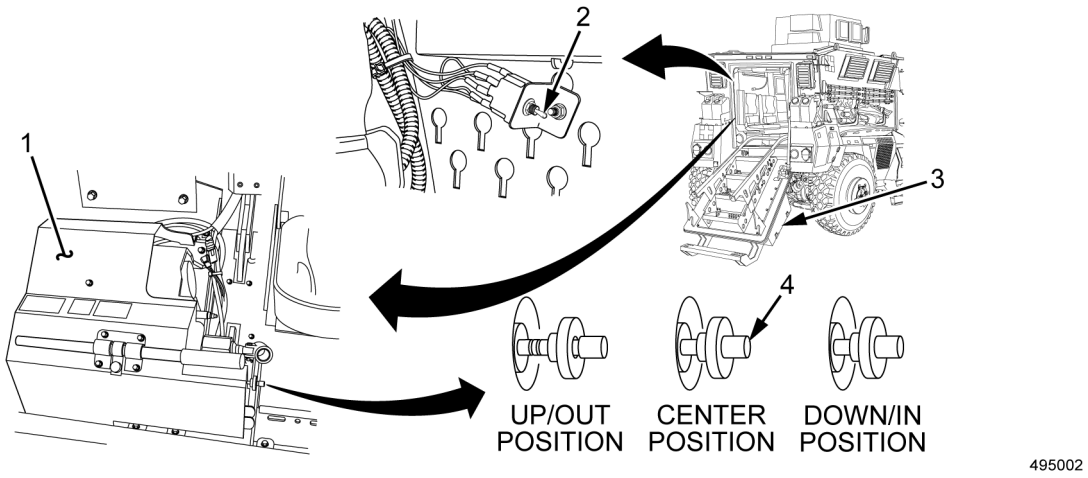


Figure 2. Passenger Rear Door/Ramp Toggle Switch.

1. Turn MAIN POWER switch (Figure 1, Item 1) ON.
2. Rear passenger verifies plunger (Figure 2, Item 4) on side of hydraulic tank cover (Figure 2, Item 1) is in center position.

CAUTION

Trolleys must be in stowed position and locked on trolley rail. Trolleys can bind trolley rail as rear door/ramp is raising. Failure to comply may result in damage to equipment.

Rear door/ramp toggle switch must be released when rear door/ramp is fully lowered or raised. Prolonged operation of the hydraulic pump after rear door/ramp has cycled completely will cause it to seize or burn out. Failure to comply may result in damage to equipment.

3. Assistant sounds vehicle horn. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
4. From passenger area, push and hold rear door/ramp toggle switch (Figure 2, Item 2) down to OPEN position to lower rear door/ramp (Figure 2, Item 3).
5. When rear door/ramp (Figure 2, Item 3) is fully lowered, release rear door/ramp toggle switch (Figure 2, Item 2).
6. Rear passenger verifies plunger (Figure 2, Item 4) on side of hydraulic tank cover (Figure 2, Item 1) is in center position.
7. Assistant sounds vehicle horn. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
8. Push and hold rear door/ramp toggle switch (Figure 2, Item 2) up to CLOSED position to raise rear door/ramp (Figure 2, Item 3).
9. When rear door/ramp (Figure 2, Item 3) is fully raised, release rear door/ramp toggle switch (Figure 2, Item 2).
10. If necessary, turn MAIN POWER switch (Figure 1, Item 1) OFF.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - FUEL FIRED HEATER OPERATION

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Wheels chocked (WP 0013)

OPERATING PROCEDURES

WARNING

Do not operate fuel fired heater in an enclosed area without adequate ventilation. Switch fuel fired heater OFF before refueling operations. Failure to comply can result in serious injury or death to personnel.

Setting Time And Day

NOTE

Fuel fired heater may be used with or without engine running.

On initial startup, the fuel fired heater may require several start attempts to self-prime the fuel system. It is normal for heater to produce exhaust smoke upon start up. If the heater fails to start, it will automatically attempt a second start. If unsuccessful, the heater will shut down completely. If heater shuts down due to flame-out while in operation mode, it will automatically attempt one restart. If successful, it will continue to run; if not successful, it will shut down completely for a cool-down cycle. During operation, fuel fired heater continually senses the input voltage from the batteries. If the input voltage drops to approximately 10.5 volts or increases above 16 volts, it will automatically shut down for a cool-down cycle and display a fault code on the control unit display.

When coolant reaches 176°F (80°C), fuel fired heater automatically switches to low heat mode and continues to run.

If the coolant temperature continues to rise, fuel fired heater will automatically switch off when temperature reaches 187°F (86°C).

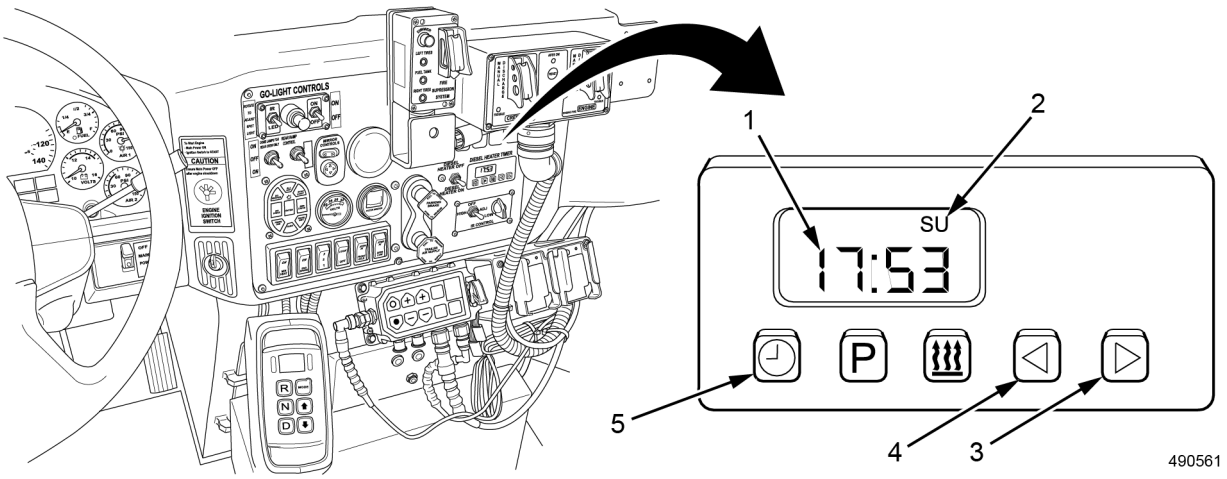


Figure 1. Timer Control Panel - Time and Day.

1. Press clock button (Figure 1, Item 5) and hold until time (Figure 1, Item 1) begins to flash. Using left/right arrow buttons (Figure 1, Item 3 and 4) set time (Figure 1, Item 1) (24 hour clock). When time stops flashing, time has been saved. The day (Figure 1, Item 2) will begin to flash.
2. Using left/right arrow buttons (Figure 1, Item 3 and 4), set day (Figure 1, Item 2). When day stops flashing, day has been saved.

END OF TASK

OPERATING PROCEDURES

Manual Operation

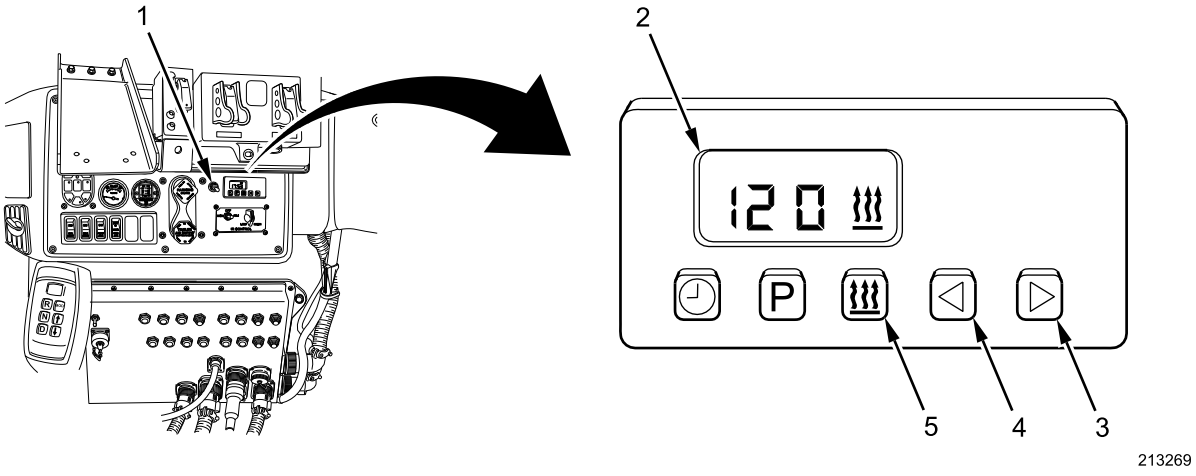


Figure 2. Timer Control Panel - Manual Operation.

NOTE

The timer allows run times up to 120 minutes before automatically turning off. By default, the countdown timer is preset to operate for 120 minutes.

1. Turn DIESEL HEATER switch (Figure 2, Item 1) ON.

2. Press three arrow button (Figure 2, Item 5). Button will illuminate RED. The display screen (Figure 2, Item 2) will display programmed run time of 120 and heater symbol.
3. Adjust programmed run time using left/right buttons (Figure 2, Item 3 and 4).
4. To turn fuel fired heater off, press three arrow button (Figure 2, Item 5). The fuel fired heater unit will complete a cool-down cycle and turn off.
5. Turn DIESEL HEATER switch (Figure 2, Item 1) OFF.
6. To permanently adjust run time, press left arrow button (Figure 2, Item 4) and hold about 3 seconds until display screen (Figure 2, Item 2) begins to flash, then release button.
7. Using left/right arrow buttons (Figure 2, Item 3 and 4), set new run time. When display screen stops flashing, new run time has been saved.

END OF TASK

OPERATING PROCEDURES

Setting Run/Start Times Into Memory

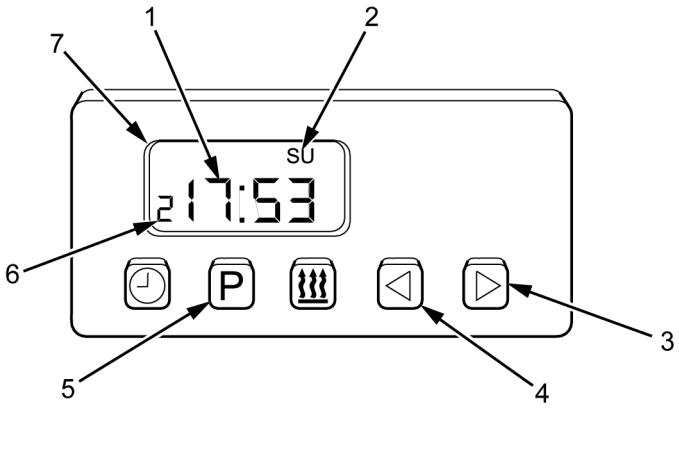


Figure 3. Control Panel Display - Setting Memory.

NOTE

The timer allows for pre-selection of turn-on time up to 7 days in advance.

Three memory locations are available, labeled 1, 2, and 3.

1. Press P button (Figure 3, Item 5) until desired memory location (Figure 3, Item 6) is shown on display screen (Figure 3, Item 7).
2. Using left/right arrow buttons (Figure 3, Item 3 and 4) set start time (Figure 3, Item 1) (24 hour clock). When time stops flashing, start time has been saved. The day (Figure 3, Item 2) will begin to flash.
3. Using left/right arrow buttons (Figure 3, Item 3 and 4), set day (Figure 3, Item 2). When day stops flashing, start day has been saved.
4. Perform steps 1 through 3 to set remaining memory locations if needed.

END OF TASK

OPERATING PROCEDURES

Using Preset Run/Start Times

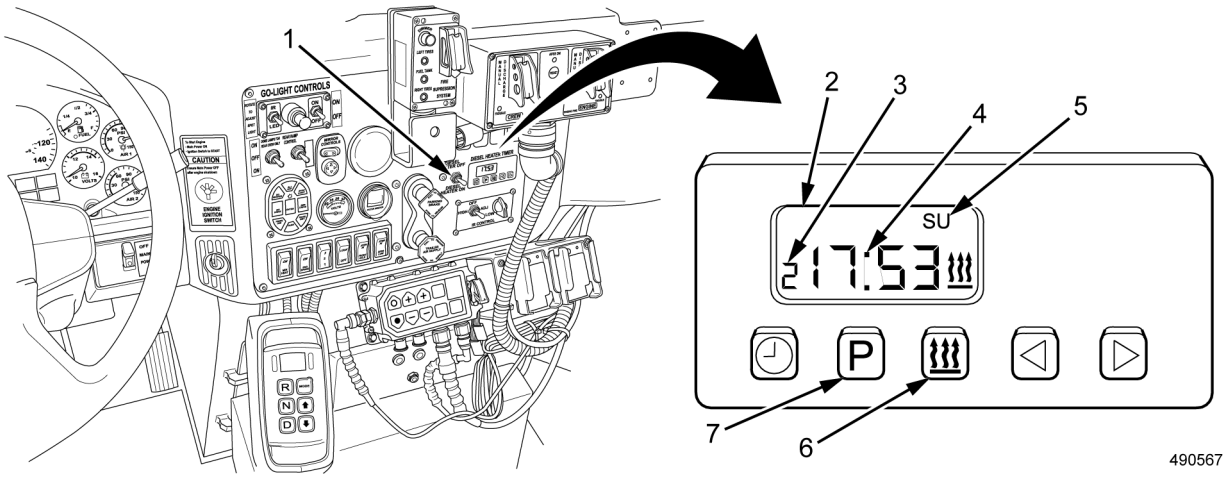


Figure 4. Control Panel Display - Using Preset Times.

1. Verify DIESEL HEATER switch (Figure 4, Item 1) is OFF.
2. Press P button (Figure 4, Item 7) until desired memory location (Figure 4, Item 3) appears in display screen (Figure 4, Item 2). The fuel fired heater will start at the time (Figure 4, Item 4) and day (Figure 4, Item 5) displayed. When preset is chosen, the three arrow button (Figure 4, Item 6) will flash RED until the fuel fired heater starts.
3. Turn DIESEL HEATER switch (Figure 4, Item 1) ON. At the end of preset run time the fuel fired heater unit will complete a cool-down cycle and turn off.
4. Turn DIESEL HEATER switch (Figure 4, Item 1) OFF after cool-down cycle is complete.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - 110V OUTLETS AND POWER INVERTER

INITIAL SETUP:

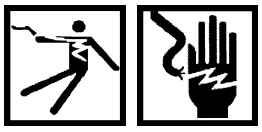
References
WP 0004

Parking brake set (WP 0013)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)

OPERATING PROCEDURES

WARNING



Use extreme caution when testing or working on electrical circuits. Always assume that electrical circuits are live. Electrical shock can occur upon contact with voltage high enough to cause current flow through muscles or nerves. On Direct Current (DC) systems, generally 1 mA of current can be felt, 5 mA can cause severe pain, 15 mA can cause loss of muscle control, and 70 mA can be fatal. Wear protective clothing; ensure skin, clothing, and surrounding areas are dry; do not wear jewelry; and touch only the insulated, nonmetallic parts of electrical components and testing equipment. To prevent electrical arcing, avoid shorting electrical test probes and jumper wires. Electrical arcing can cause bright flashes of light, capable of causing temporary blindness. If electrical injury occurs, immediately shut off power supply and seek medical assistance. Failure to comply may result in serious injury or death to personnel.

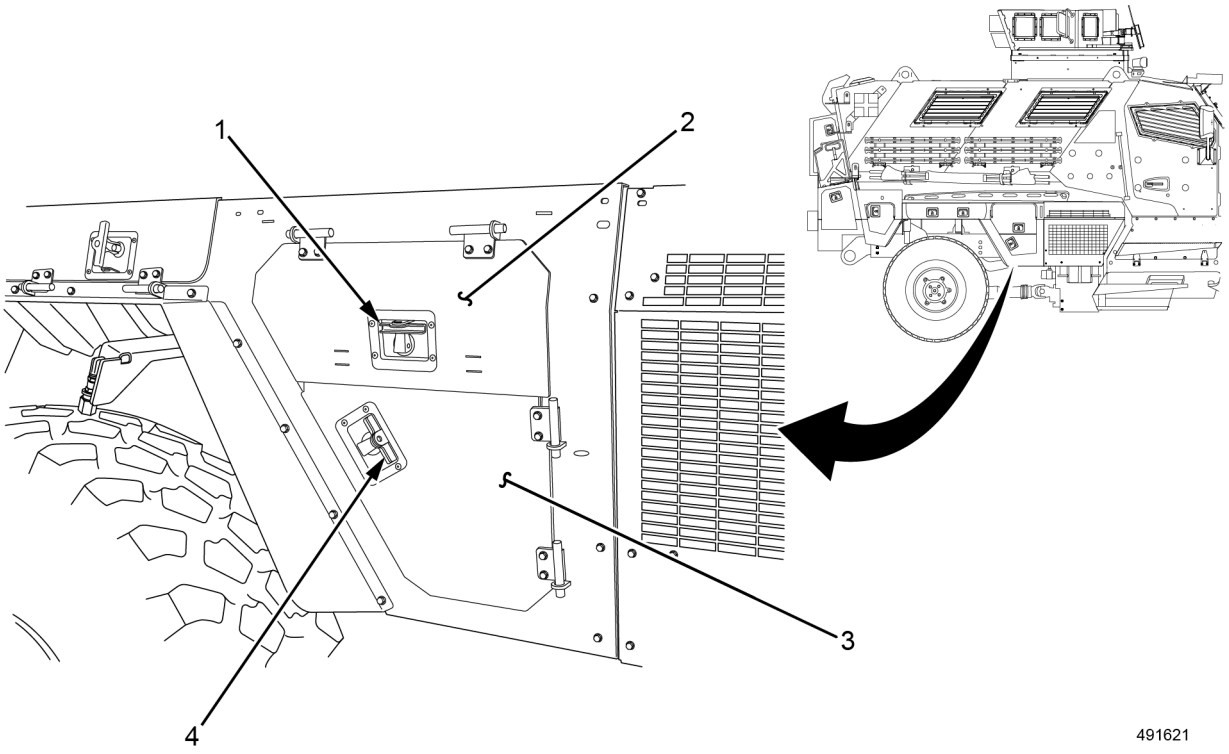


Figure 1. Stowage Box Doors.

1. Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. Pull out latch handle (Figure 1, Item 1) and turn counterclockwise to open upper stowage door (Figure 1, Item 2).
3. Pull out latch handle (Figure 1, Item 4) and turn counterclockwise to open lower stowage door (Figure 1, Item 3).

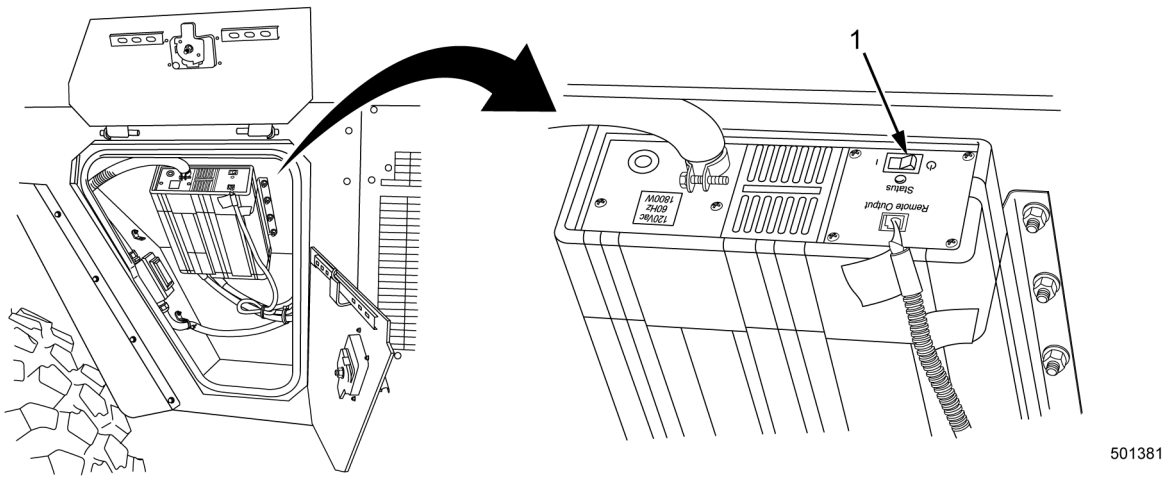


Figure 2. 110V Power Inverter.

4. Push 110V power inverter switch (Figure 2, Item 1) to on position.

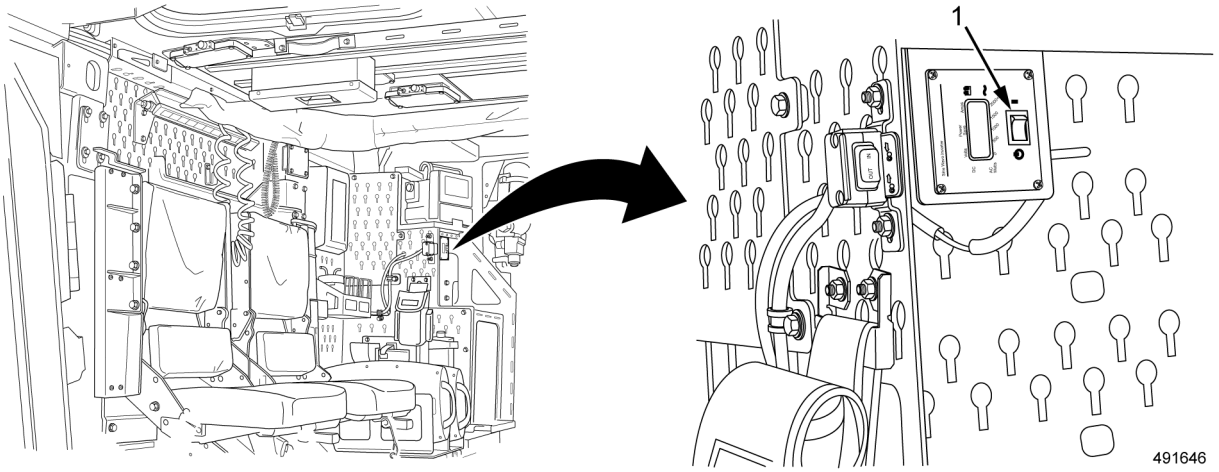


Figure 3. Remote Inverter Switch.

5. Press remote inverter switch (Figure 3, Item 1) to ON position.

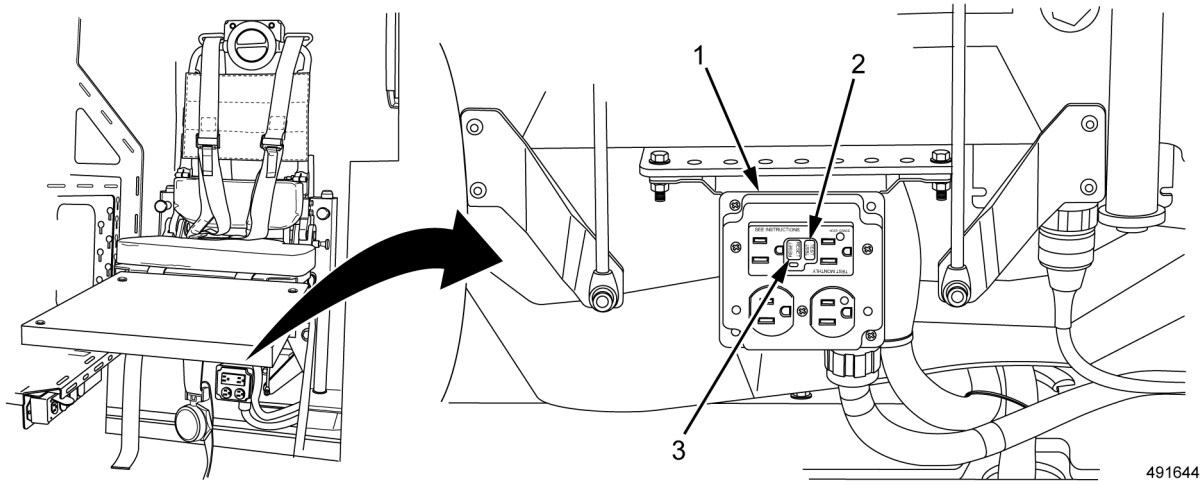


Figure 4. 110V Outlets and GFCI.

6. Press Ground Fault Circuit Interruptor (GFCI) TEST button (Figure 4, Item 2) on 110V outlet (Figure 4, Item 1).
7. Press GFCI RESET button (Figure 4, Item 3) on 110V outlet (Figure 4, Item 1).
8. Insert 110V connector from auxiliary equipment into 110V outlet (Figure 4, Item 1).
9. When done, unplug auxiliary equipment from 110V outlet (Figure 4, Item 1).

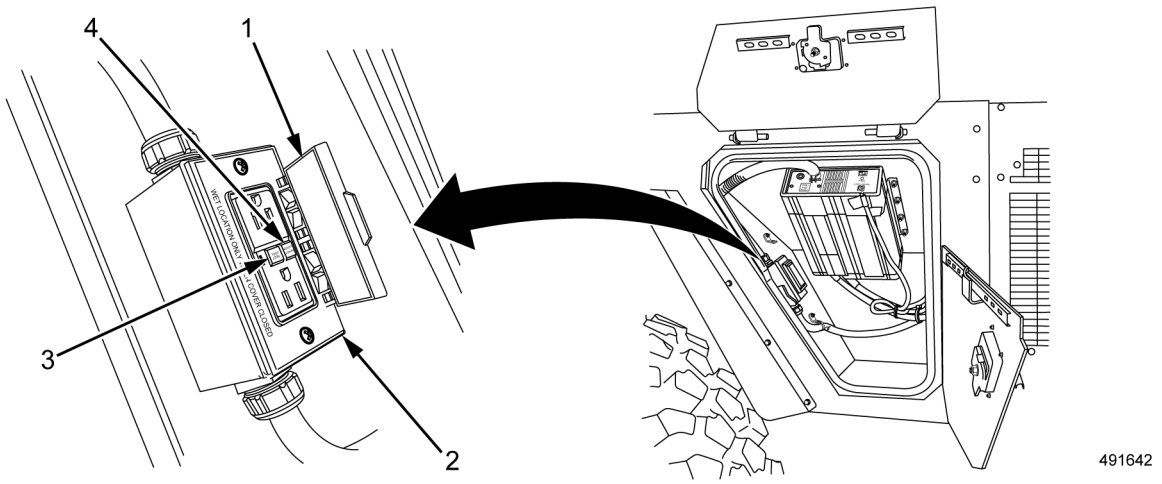


Figure 5. Outside Stowage Box 110V Outlet and GFCI.

10. Open 110V outlet cover (Figure 5, Item 1).
11. Press GFCI TEST button (Figure 5, Item 4) on 110V outlet (Figure 5, Item 2).
12. Press GFCI RESET button (Figure 5, Item 3) on 110V outlet (Figure 5, Item 2).
13. Insert 110V connector from auxiliary equipment into 110V outlet (Figure 5, Item 2).
14. When done, unplug auxiliary equipment from 110V outlet (Figure 5, Item 2).

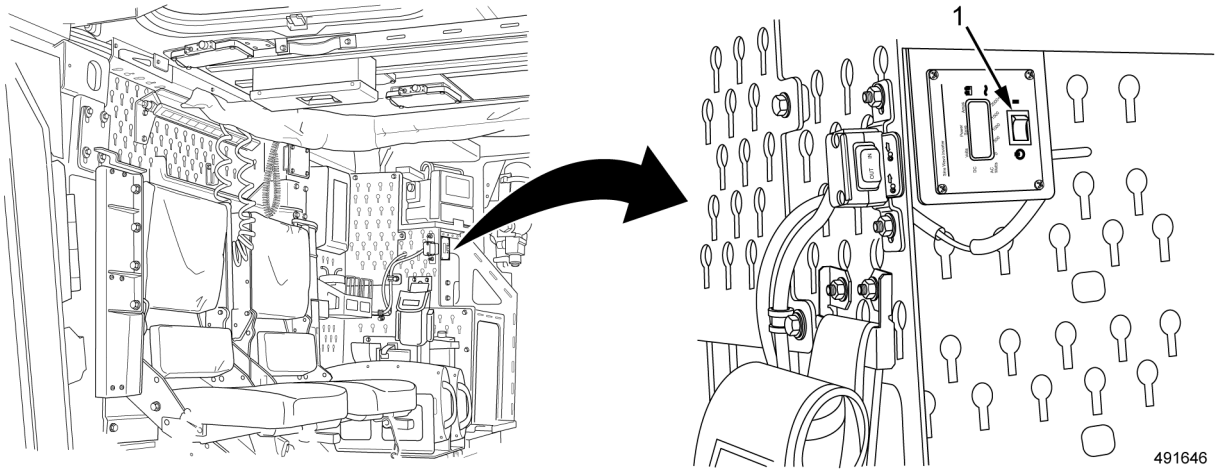


Figure 6. Remote Inverter Switch.

15. Press remote inverter switch (Figure 6, Item 1) to OFF position.

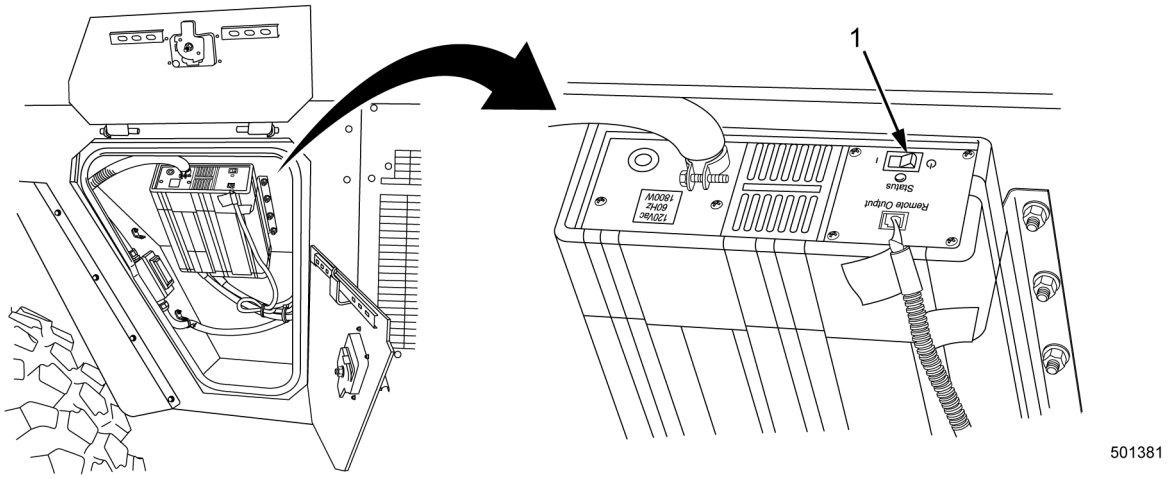


Figure 7. 110V Power Inverter.

16. Press switch (Figure 7, Item 1) on 110V power inverter to off position.

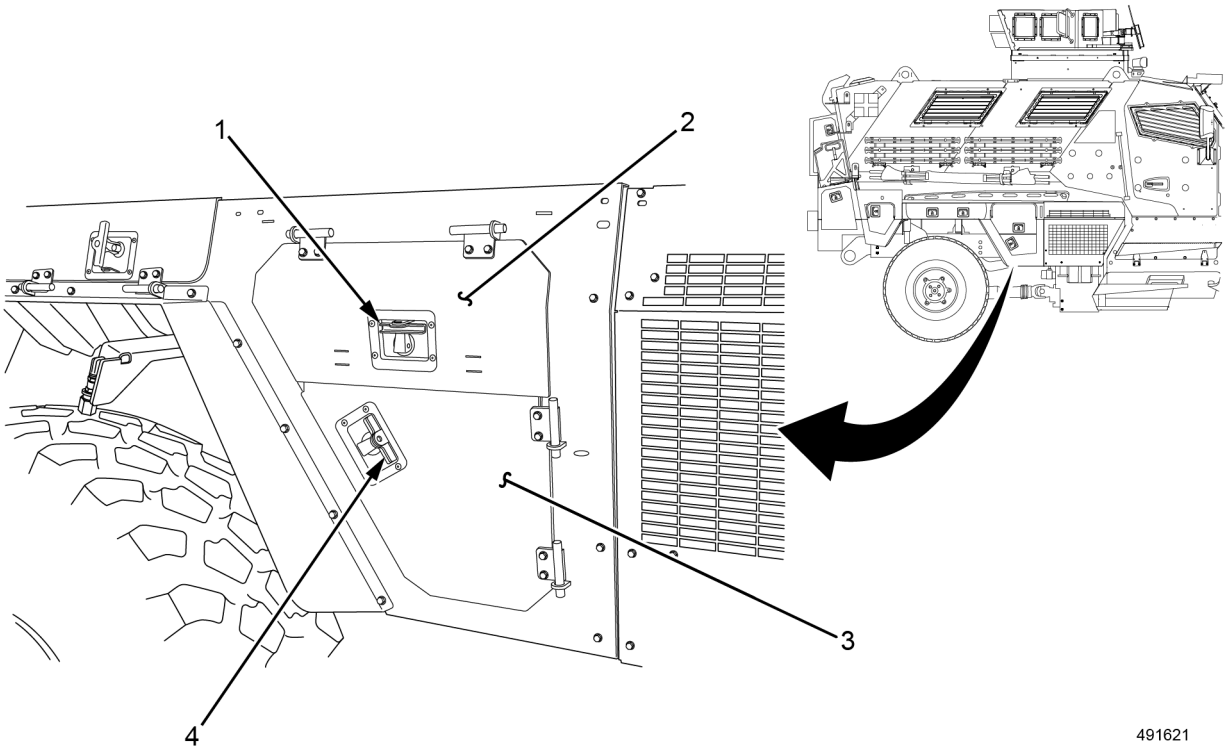


Figure 8. Stowage Box Doors.

17. Close lower stowage door (Figure 8, Item 3) and turn latch handle (Figure 8, Item 4) clockwise to secure stowage door.
18. Close upper stowage door (Figure 8, Item 2) and turn latch handle (Figure 8, Item 1) clockwise to secure stowage door.
19. Push two latch handles (Figure 8, Item 1 and 4) in to resting position.
20. Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - 110V POWER STRIP OPERATION

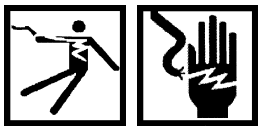
INITIAL SETUP:

References
WP 0004
WP 0020

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

WARNING



Use extreme caution when testing or working on electrical circuits. Always assume that electrical circuits are live. Electrical shock can occur upon contact with voltage high enough to cause current flow through muscles or nerves. On Direct Current (DC) systems, generally 1 mA of current can be felt, 5 mA can cause severe pain, 15 mA can cause loss of muscle control, and 70 mA can be fatal. Wear protective clothing; ensure skin, clothing, and surrounding areas are dry; do not wear jewelry; and touch only the insulated, nonmetallic parts of electrical components and testing equipment. To prevent electrical arcing, avoid shorting electrical test probes and jumper wires. Electrical arcing can cause bright flashes of light, capable of causing temporary blindness. If electrical injury occurs, immediately shut off power supply and seek medical assistance. Failure to comply may result in serious injury or death to personnel.

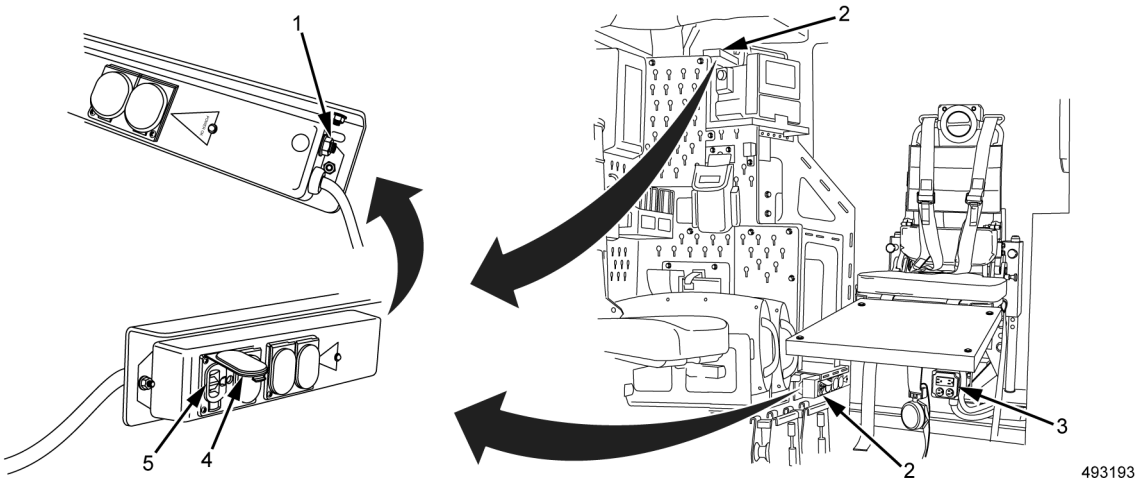


Figure 1. 110V Power Strip.

NOTE

There are two 110V power strips. Both operate the same.

1. Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. Turn 110V power inverter and remote switch on. Refer to WP 0020, Operation Under Usual Conditions – 110V Outlets and Power Inverter.
3. Push 110V power strip (Figure 1, Item 2) power cord connector into 110V outlet (Figure 1, Item 3).
4. Push reset button (Figure 1, Item 1) on 110V power strip (Figure 1, Item 2).
5. Open cover (Figure 1, Item 4) on 110V power strip (Figure 1, Item 2).
6. Push equipment plug into 110V power strip outlet (Figure 1, Item 5).
7. Verify equipment is operating.
8. When done, pull equipment plug from 110V power strip outlet (Figure 1, Item 5).
9. Close cover (Figure 1, Item 4) on 110V power strip (Figure 1, Item 2).
10. Pull 110V power strip (Figure 1, Item 2) power cord connector from 110V outlet (Figure 1, Item 3).
11. Turn 110V power inverter and remote switch off. Refer to WP 0020, Operation Under Usual Conditions – 110V Outlets and Power Inverter.
12. Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - 12V AUXILIARY EQUIPMENT OUTLETS

INITIAL SETUP:

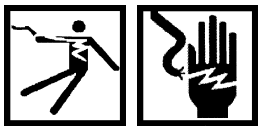
References
WP 0004

Parking brake set (WP 0013)

Equipment Condition
Transmission in NEUTRAL (N) (WP 0013)

OPERATING PROCEDURES

WARNING



Use extreme caution when testing or working on electrical circuits. Always assume that electrical circuits are live. Electrical shock can occur upon contact with voltage high enough to cause current flow through muscles or nerves. On Direct Current (DC) systems, generally 1 mA of current can be felt, 5 mA can cause severe pain, 15 mA can cause loss of muscle control, and 70 mA can be fatal. Wear protective clothing; ensure skin, clothing, and surrounding areas are dry; do not wear jewelry; and touch only the insulated, nonmetallic parts of electrical components and testing equipment. To prevent electrical arcing, avoid shorting electrical test probes and jumper wires. Electrical arcing can cause bright flashes of light, capable of causing temporary blindness. If electrical injury occurs, immediately shut off power supply and seek medical assistance. Failure to comply may result in serious injury or death to personnel.

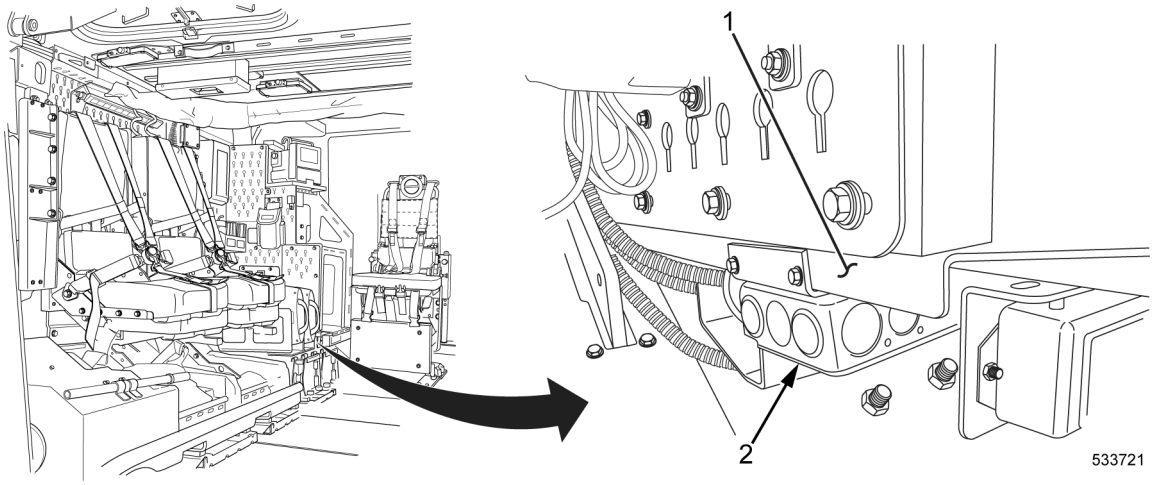


Figure 1. Driver Side 12V Outlet.

1. Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. Push equipment plug into driver side 12V outlet (Figure 1, Item 2) on communications rack (Figure 1, Item 1) or commander side 12V outlet (Figure 2, Item 2) on Heating, Ventilation, and Air Conditioning (HVAC) unit (Figure 2, Item 1).

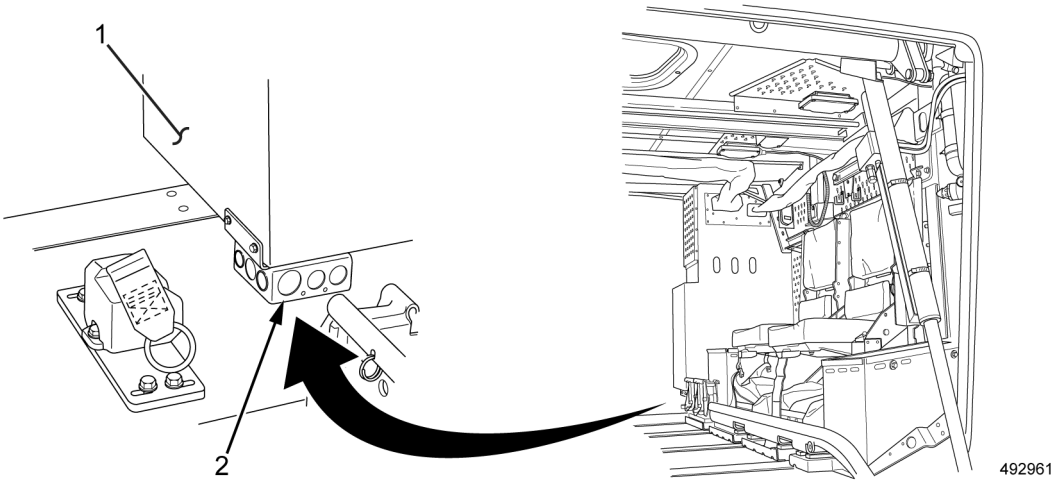


Figure 2. Commander Side 12V Outlet.

3. When done, pull equipment plug from driver side 12V outlet (Figure 1, Item 2) on communications rack (Figure 1, Item 1) or commander side 12V outlet (Figure 2, Item 2) on HVAC unit (Figure 2, Item 1).
4. Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - SLIDING HATCH (ROOF)

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)

References
WP 0027

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

Sliding Hatch (Roof) Open

WARNING

Sliding hatch (roof) is extremely heavy. Use caution when opening and closing. Keep all body parts clear of hatch when opening and closing to avoid injury. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

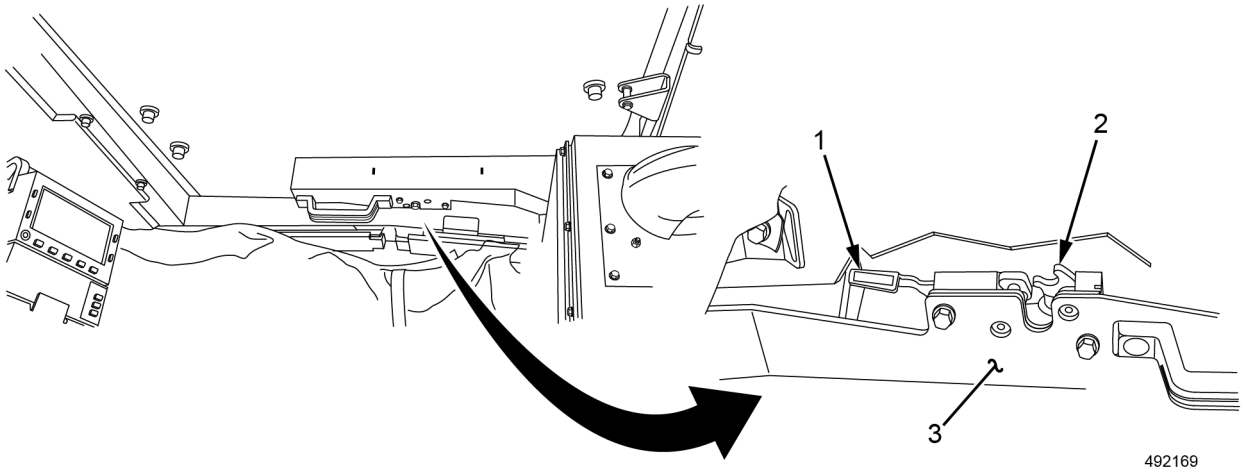


Figure 1. Sliding Hatch (Roof) Access.

NOTE

Sliding hatch may be used as an emergency egress.

1. Push lever (Figure 1, Item 1) to release pawl (Figure 1, Item 2) on interlocking mechanism (Figure 1, Item 3).

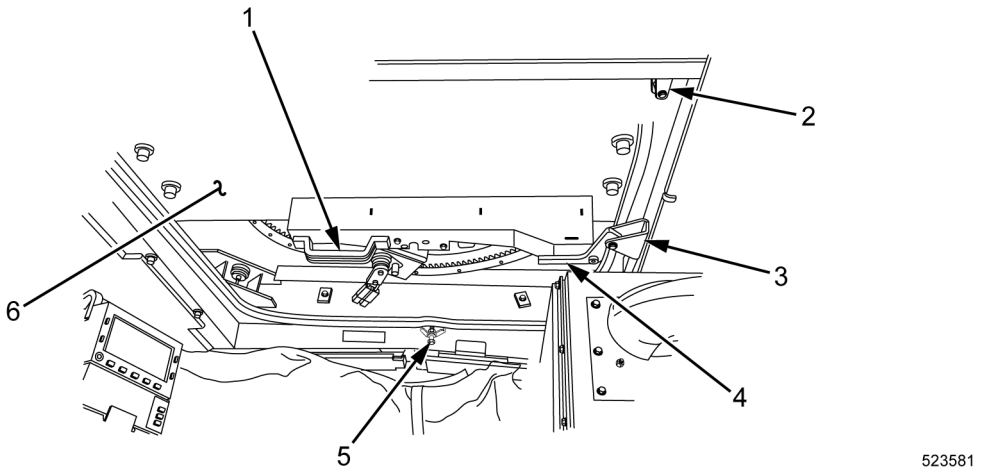
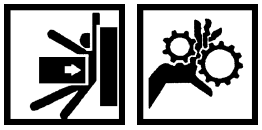


Figure 2. Sliding Hatch (Roof) Open.

WARNING



Sliding hatch can move if not locked in closed or full open position. Do not operate vehicle while sliding hatch is not locked in the closed or full open position. Do NOT operate vehicle if the sliding hatch is in the center position. It does not lock and can continue to slide. Failure to comply may result in serious injury or death to personnel.

2. Push sliding hatch (Figure 2, Item 6) toward rear of vehicle using handle (Figure 2, Item 1) until latch (Figure 2, Item 4) slides past safety catch (Figure 2, Item 3) with audible click.

WARNING

There is not enough clearance between handle and task light to open sliding hatch to full open position using handle. Release handle and push sliding hatch by hand to full open position. Failure to comply may result in severe injury to personnel.

3. Release handle (Figure 2, Item 1) on sliding hatch (Figure 2, Item 6).
4. Push sliding hatch (Figure 2, Item 6) toward rear of vehicle until it reaches mechanical stop and latch (Figure 2, Item 4) clicks on safety catch (Figure 2, Item 2).

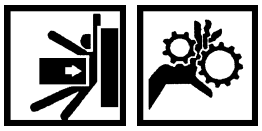
END OF TASK

OPERATING PROCEDURES

Sliding Hatch (Roof) Close

1. Ensure Improved Turret Drive System (ITDS) electrical connector is disconnected. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

WARNING



Sliding hatch can move if not locked in closed or full open position. Do not operate vehicle while sliding hatch is not locked in the closed or full open position. Do NOT operate vehicle if the sliding hatch is in the center position. It does not lock and can continue to slide. Failure to comply may result in serious injury or death to personnel.

2. Push latch (Figure 2, Item 4) to release from safety catch (Figure 2, Item 2) and pull sliding hatch (Figure 2, Item 6) forward toward front of vehicle using handle (Figure 2, Item 1) until latch (Figure 2, Item 4) rests on safety catch (Figure 2, Item 3).
3. Push latch (Figure 2, Item 4) to release sliding hatch (Figure 2, Item 6) from safety catch (Figure 2, Item 3) and pull sliding hatch forward toward front of vehicle using handle (Figure 2, Item 1).

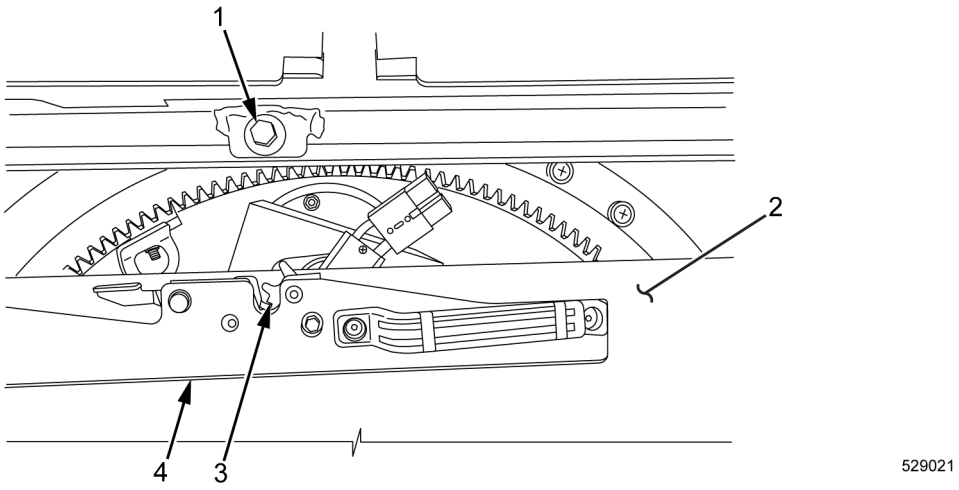


Figure 3. Sliding Hatch (Roof) Pawl and Interlocking Mechanism.

4. Continue to push sliding hatch (Figure 3, Item 2) forward toward front of vehicle until pawl (Figure 3, Item 3) on interlocking mechanism (Figure 3, Item 4) locks on catch (Figure 3, Item 1).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - IMPROVED GUNNER RESTRAINT SYSTEM (IGRS) OPERATION

INITIAL SETUP:

Materials/Parts
Belt, vehicular safety (WP 0108, Item 6)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

Improved Gunner Restraint System (IGRS) Connect

WARNING

The Improved Gunner Restraint System (IGRS) is a protection system that includes a harness, tail strap, rigidly mounted retractor. The IGRS is considered a personal safety restraint device. Crew member must be trained in rollover drills. The IGRS along with the rollover training is a safety enhancement for turreted vehicle systems. Do not rely solely on the IGRS to prevent injury in the event of a rollover. The IGRS is designed to prevent the gunner from ejecting from the vehicle during a dynamic event, it will not pull the gunner back into the vehicle. Failure to comply may result in injury or death to personnel.

Using commercial IGRS or mixing or modifying approved IGRS equipment to include restraint harness and retractor is unauthorized. Wearing the IGRS in any manner other than directed is not allowed. Failure to comply may result in injury or death to personnel.

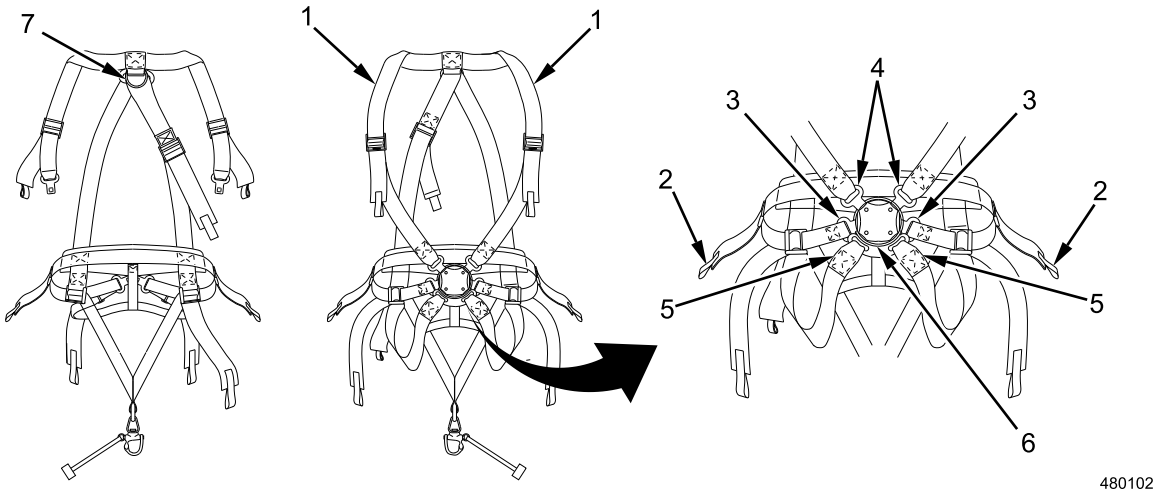


Figure 1. IGRS Straps.

NOTE

Upper D-ring should be on outside of IGRS.

1. Locate upper D-ring (Figure 1, Item 7) and loosen all adjustable straps to their full length.
2. Place the two vertical anchor straps (Figure 1, Item 1) over the shoulders, ensuring RED vertical anchor strap is on the right and GREEN vertical anchor strap is on the left.
3. Locate quick release rotary buckle (Figure 1, Item 6) and bring through the legs to the low point of the abdomen.
4. Connect the vertical anchor strap latches(Figure 1, Item 4) to the quick release rotary buckle (Figure 1, Item 6), ensuring that the RED vertical anchor strap (Figure 1, Item 1) is on the right and the GREEN vertical anchor strap (Figure 1, Item 1) is on the left.
5. Connect the lower anchor straps (Figure 1, Item 5) to the quick release rotary buckle (Figure 1, Item 6), ensuring the RED lower anchor strap is on the right and the GREEN lower anchor strap is on the left.
6. Adjust harness by pulling on adjustable tabs on the waist (Figure 1, Item 3), lower (Figure 1, Item 5) and vertical anchor straps (Figure 1, Item 1) for a snug fit.

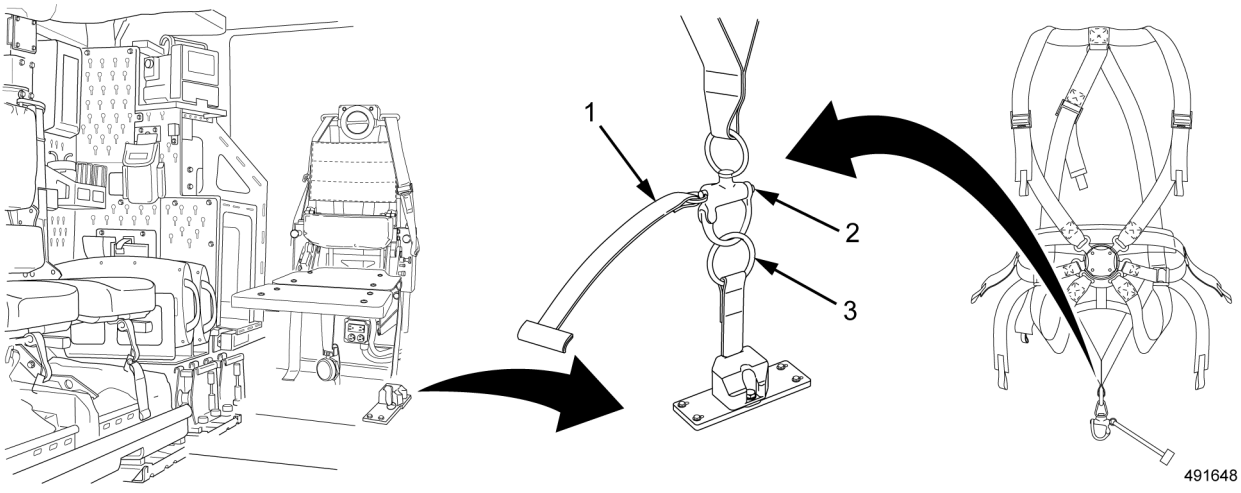


Figure 2. IGRS Anchor Strap.

7. Pull emergency pull strap (Figure 2, Item 1) to open pelican clip quick release (Figure 2, Item 2).
8. Insert pelican clip quick release (Figure 2, Item 2) to floor retractor ring (Figure 2, Item 3).

9. Release emergency pull strap (Figure 2, Item 1) to close pelican clip quick release (Figure 2, Item 2).

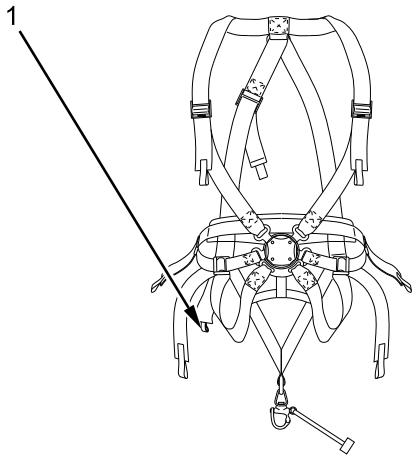


Figure 3. Tail Strap Adjustor Tab.

CAUTION

Ensure both feet remain on gunner platform. Several components are mounted in close proximity to the gunner platform. Do not step on or kick components mounted near the gunner platform. Failure to comply may result in damage to equipment.

10. Adjust tail strap adjustor tab (Figure 3, Item 1) as desired to fit height and eliminate slack.

END OF TASK

OPERATING PROCEDURES

IGRS Disconnect

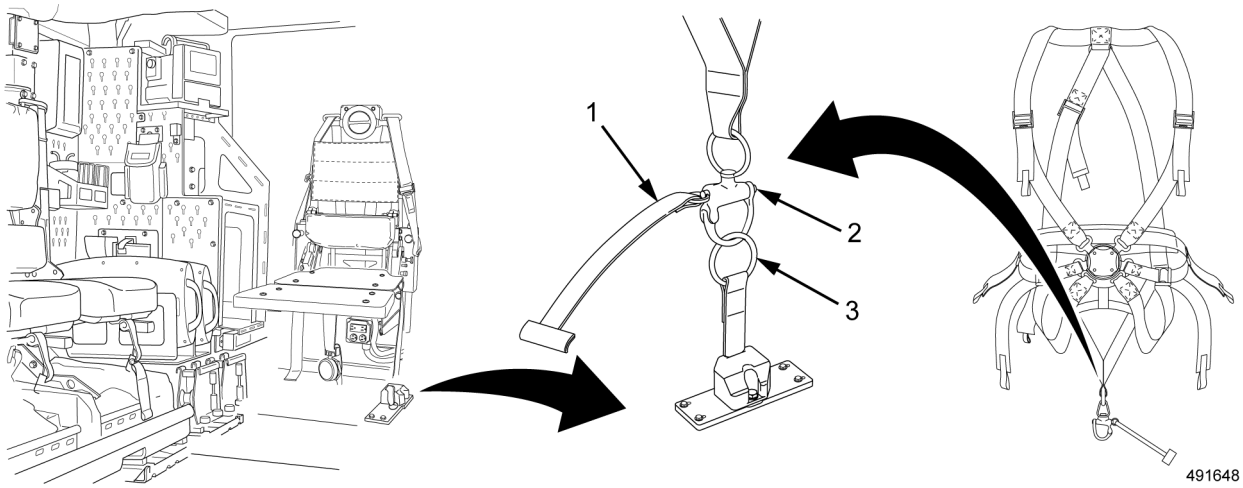


Figure 4. IGRS Anchor Strap.

1. Pull emergency pull strap (Figure 4, Item 1) to release pelican clip quick release (Figure 4, Item 2) from floor retractor ring (Figure 4, Item 3)

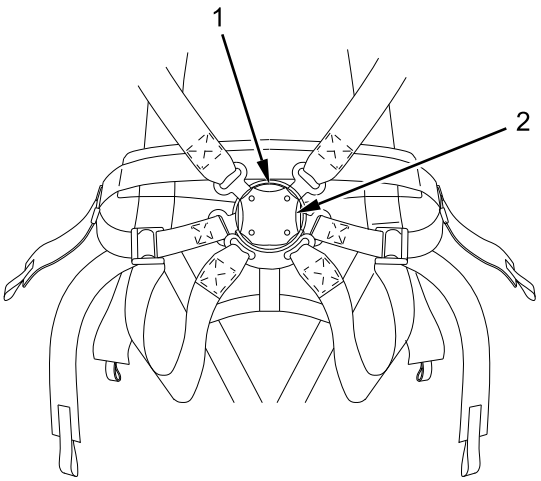


Figure 5. IGRS Buckle.

2. To remove IGRS, push rotary buckle YELLOW release button (Figure 5, Item 1) and rotate buckle (Figure 5, Item 2) clockwise or counterclockwise.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - BLAST ENERGY ATTENUATING TURRET SEAT (BEATS) OPERATION

INITIAL SETUP:

Materials/Parts
Goggles, industrial (WP 0110, Item 13)

Parking brake set (WP 0013)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)

OPERATING PROCEDURES

Blast Energy Attenuating Turret Seat (BEATS) Installation

WARNING

Under seat area is designated for stowage of properly packaged medical equipment only. Ensure medical equipment is properly retained with stowage nets. Improper use may lead to seat failure during a blast event. Failure to comply may result in serious injury or death to personnel.

Ensure straps are not kinked, knotted, damaged, cut, or frayed before fastening to platform. If damaged, cut, or frayed, notify Field Level Maintenance for replacement. Failure to comply may result in serious injury or death to personnel.

When adjusting Blast Energy Attenuating Turret Seat (BEATS) for use, ensure both feet are square on gunner platform and adjust seat back as far forward as possible to reduce the risk of injury. Failure to comply may result in serious injury or death to personnel.

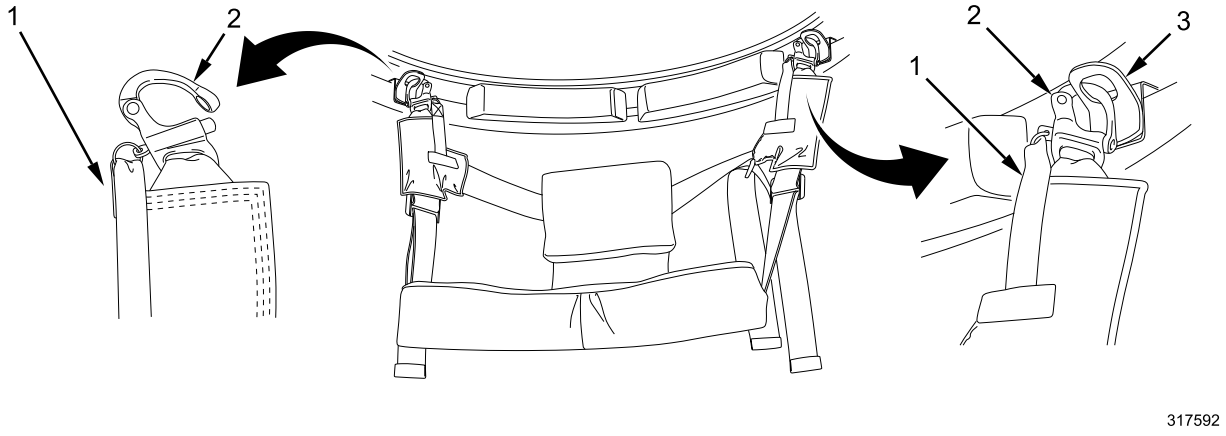


Figure 1. BEATS.

1. Pull emergency pull tabs (Figure 1, Item 1) to open pelican clip quick releases (Figure 1, Item 2).
2. Install pelican clip quick releases (Figure 1, Item 2) on both mounting hardware (Figure 1, Item 3).
3. Release emergency pull tabs (Figure 1, Item 1) to close pelican clip quick releases (Figure 1, Item 2).

END OF TASK

OPERATING PROCEDURES

BEATS Adjustment

WARNING

Ensure gunner restraint harness is worn properly at all times. Harness should be free of twists. Twisted straps can cause injury when gunner moves suddenly in harness. Gunner should hold onto weapon or other supports to maintain stability at all times. Failure to comply may result in serious injury or death to personnel.

Ensure straps are not kinked, knotted, damaged, cut, or frayed before fastening to platform. If damaged, cut, or frayed, notify Field Level Maintenance for replacement. Failure to comply may result in serious injury or death to personnel.

When adjusting BEATS for use, ensure both feet are square on gunner platform and adjust seat back as far forward as possible to reduce the risk of injury. Failure to comply may result in serious injury or death to personnel.

Be careful of falling debris while in the turret area. Wear safety goggles. Failure to comply may result in serious injury to personnel.

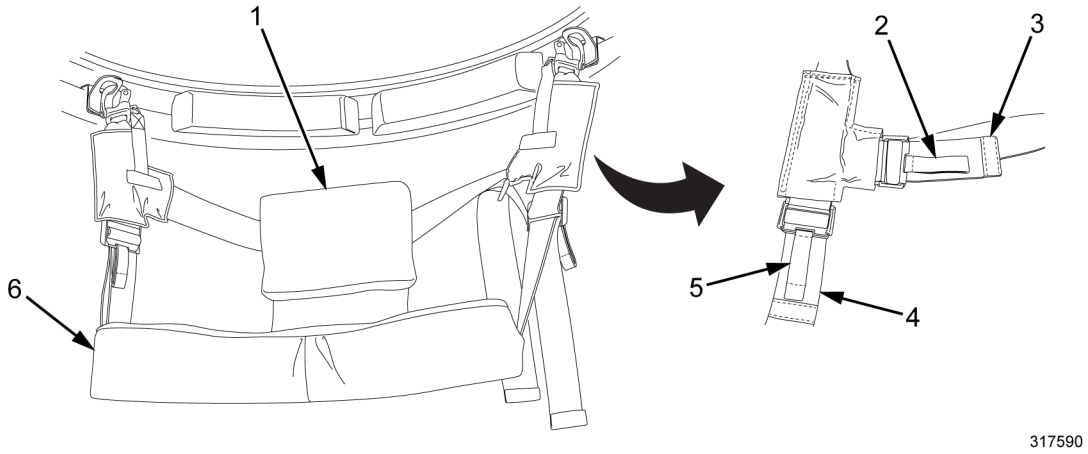


Figure 2. BEATS Adjustment.

1. Pull down on two vertical adjuster straps (Figure 2, Item 4) to raise BEATS (Figure 2, Item 6).
2. Pull upward on two strap adjuster tabs (Figure 2, Item 5) to lower BEATS (Figure 2, Item 6).
3. Pull end of horizontal adjuster strap (Figure 2, Item 3) to move BEATS backrest (Figure 2, Item 1) forward.
4. Pull end of horizontal adjuster strap tab (Figure 2, Item 2) to move BEATS backrest (Figure 2, Item 1) backward.

END OF TASK

OPERATING PROCEDURES

BEATS Removal

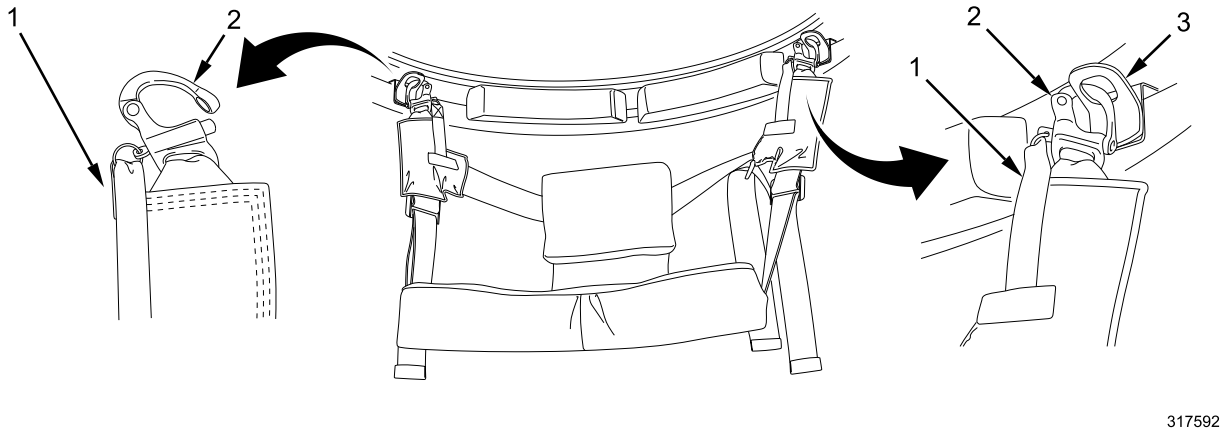


Figure 3. BEATS.

1. Pull emergency pull tabs (Figure 3, Item 1) to open quick release pelican clips (Figure 3, Item 2).
2. Remove quick release pelican clips (Figure 3, Item 2) from both mounting hardware (Figure 3, Item 3).
3. Release emergency pull tabs (Figure 3, Item 1) to close quick release pelican clips (Figure 3, Item 2).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - GUNNER PLATFORM

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

WARNING

Do not sit on gunner platform while vehicle is moving. The gunner platform does not absorb the energy in a blast event. Failure to comply may result in serious injury or death to personnel.

Ensure gunner platform is securely locked in full upright position. Locking gunner platform at lower angles does not ensure a stable platform for gunner operation. Failure to comply may result in serious injury or death to personnel.

Gunner Platform Assemble

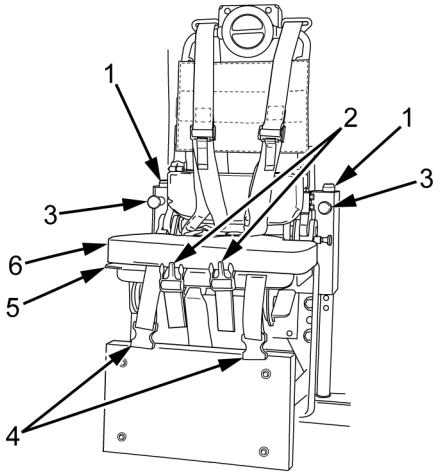


Figure 1. Cushion Removal.

1. Pull two height adjustment knobs (Figure 1, Item 3) away from slide bar (Figure 1, Item 1) to raise and lower seat (Figure 1, Item 5) to desired height.
2. Release two height adjustment knobs (Figure 1, Item 3) to lock into slide bar (Figure 1, Item 1).
3. Unbuckle two cushion strap latches (Figure 1, Item 2) from strap ends (Figure 1, Item 4).
4. Remove cushion (Figure 1, Item 6) from seat (Figure 1, Item 5).

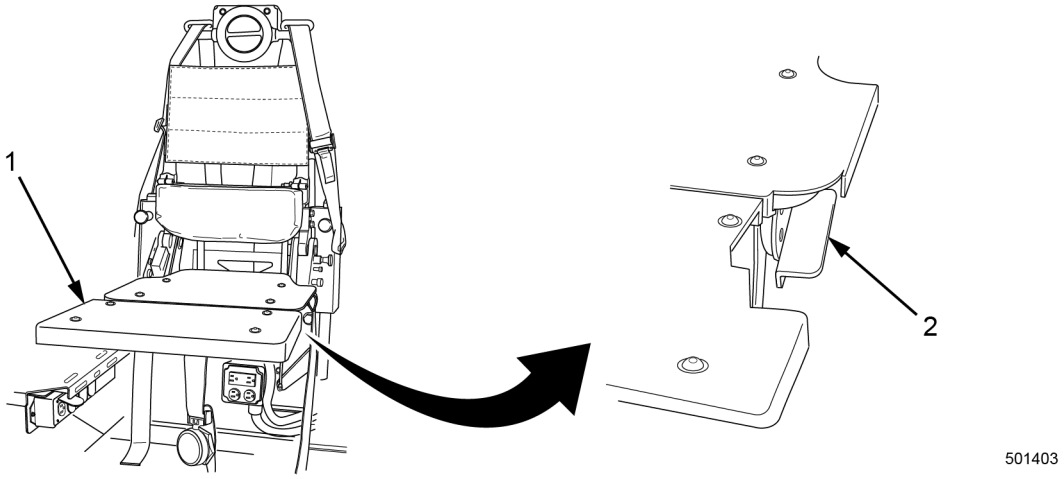


Figure 2. Gunner Platform Raised.

5. Position seat belt strap and buckle behind gunner platform (Figure 2, Item 1).
6. Push seat lever (Figure 2, Item 2) down and raise gunner platform (Figure 2, Item 1) into upright position.
7. Release seat lever (Figure 2, Item 2) to lock gunner platform (Figure 2, Item 1) in upright position.

END OF TASK

OPERATING PROCEDURES

Gunner Platform Disassemble

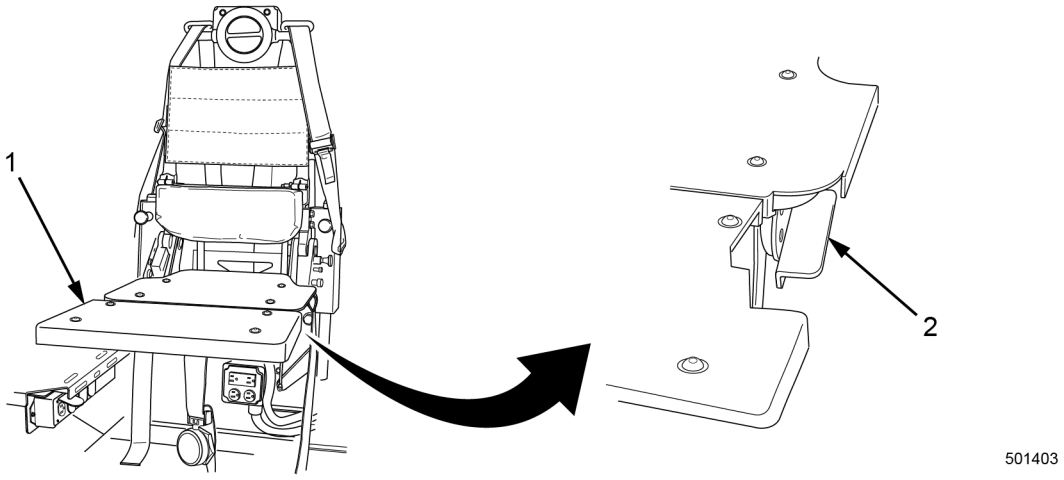


Figure 3. Gunner Platform Lowered.

1. Push seat lever (Figure 3, Item 2) down and lower gunner platform (Figure 3, Item 1).
2. Release seat lever (Figure 3, Item 2) to lock gunner platform (Figure 3, Item 1) in stowed position.

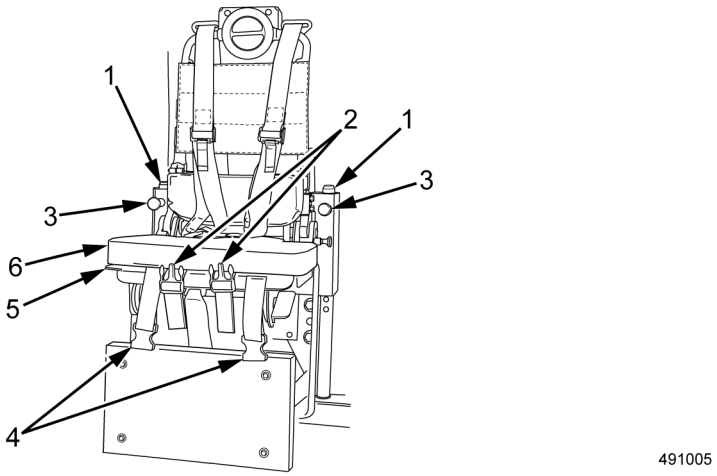


Figure 4. Cushion Installation.

3. Position cushion (Figure 4, Item 6) on seat (Figure 4, Item 5).
4. Buckle two cushion strap latches (Figure 4, Item 2) to strap ends (Figure 4, Item 4).
5. Pull two height adjustment knobs (Figure 4, Item 3) away from slide bar (Figure 4, Item 1) to raise or lower seat (Figure 4, Item 5) to desired height.
6. Release two height adjustment knobs (Figure 4, Item 3) to lock into slide bar (Figure 4, Item 1).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - OBJECTIVE GUNNERS PROTECTION KIT (OGPK) OPERATION

INITIAL SETUP:

Tools and Special Tools
Wrench, adjustable (WP 0108, Item 68)

Materials/Parts
Goggles, industrial (WP 0110, Item 13)

Personnel Required
Crewmember - (2)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

OPERATING PROCEDURES

Gunner Hatch Open

WARNING

Gunner hatch is extremely heavy. Use caution when opening and closing. Keep arms and hands clear of hatch when closing. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Be careful of falling or flying dust and debris while in the turret area. Wear safety goggles. Failure to comply may result in serious injury to personnel.

Gunner hatch can only be opened or closed when vehicle is stationary and on level surface. Do not attempt to open or close the hatch when vehicle is in motion. Ensure latch locks are secured into place in the open or closed positions before vehicle starts moving. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Ensure gunner hatch is completely locked in open position before moving vehicle with gunner in position. Use extreme caution when standing in gunner hatch while vehicle is in motion. Gunner should be holding onto weapon or other support to maintain stability at all times and shall wear a gunner's restraint when vehicle is in motion. Failure to comply may result in serious injury or death to personnel.

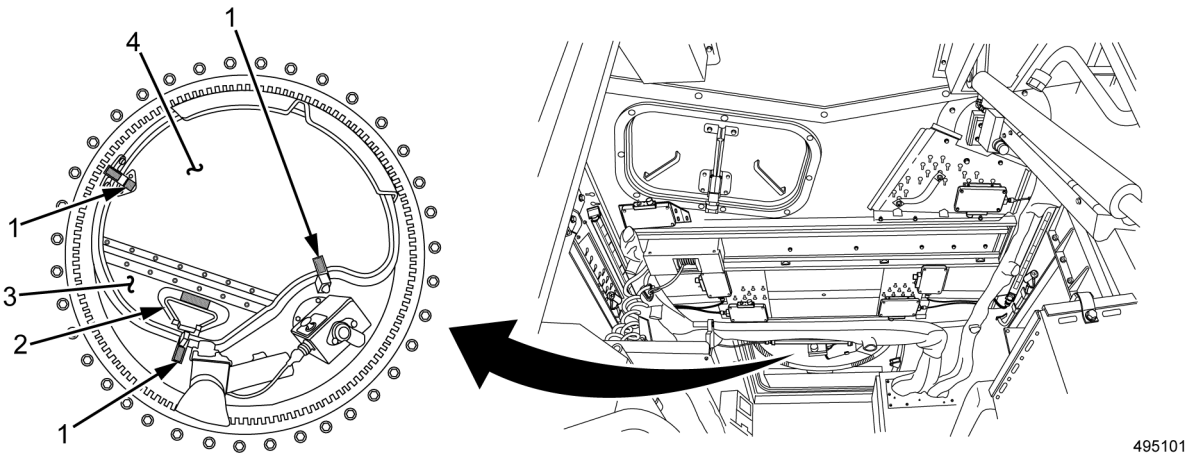


Figure 1. Gunner Hatch.

NOTE

Gunner hatch has two doors.

1. Release three latches (Figure 1, Item 1) on gunner hatch front door (Figure 1, Item 3) and gunner hatch rear door (Figure 1, Item 4).
2. Push handle (Figure 1, Item 2) to open gunner hatch front door (Figure 1, Item 3).
3. Push open gunner hatch rear door (Figure 1, Item 4).

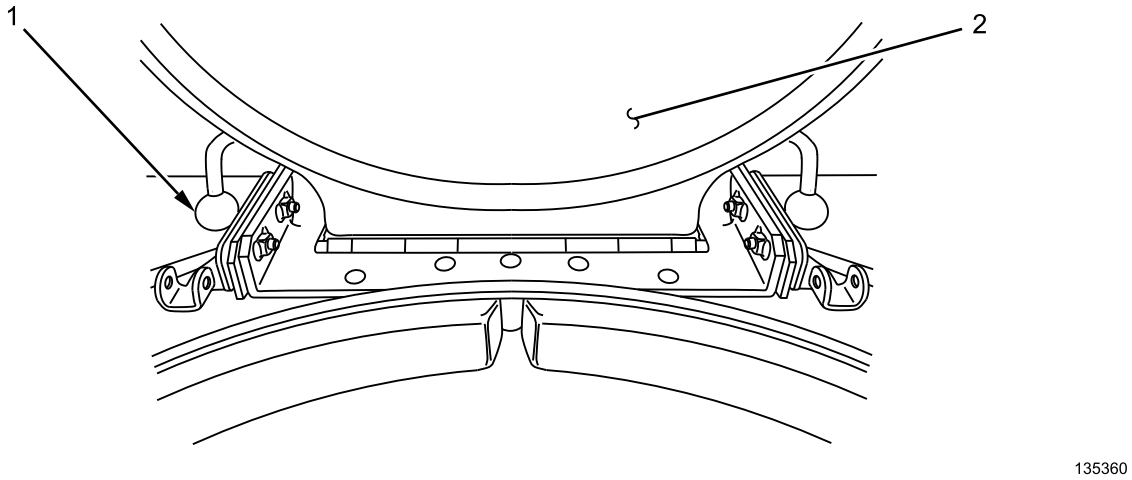


Figure 2. Gunner Hatch in Open Position.

4. Push gunner hatch (Figure 2, Item 2) rearward firmly to engage gunner hatch lock mechanism (Figure 2, Item 1).

END OF TASK

OPERATING PROCEDURES

Gunner Hatch Close

1. While pushing gunner hatch (Figure 2, Item 2) rearward firmly, push gunner hatch lock mechanism (Figure 2, Item 1) rearward firmly to release gunner hatch.

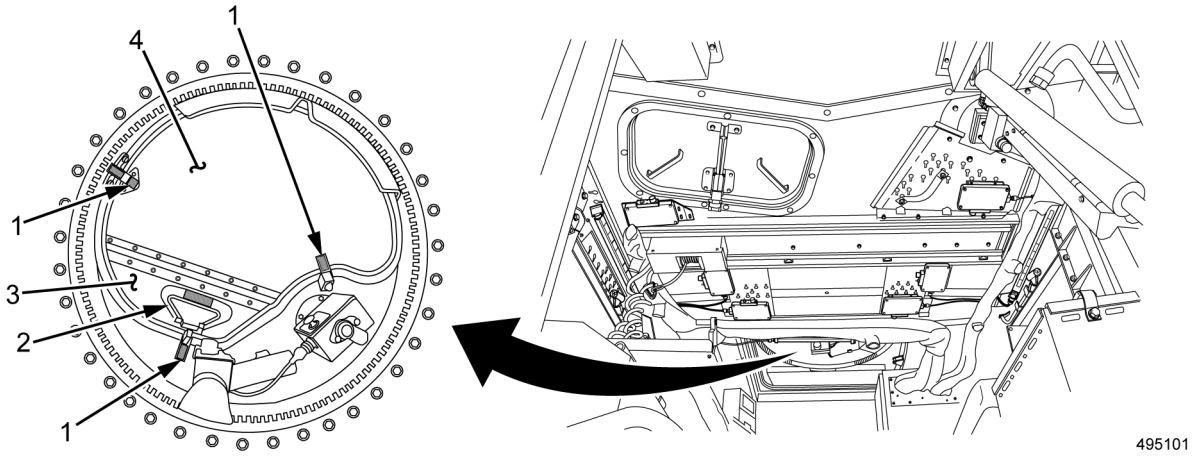


Figure 3. Close Gunner Hatch.

2. Close gunner hatch rear door (Figure 3, Item 4).
3. Grasp handle (Figure 3, Item 2) and pull gunner hatch front door (Figure 3, Item 3) closed.
4. Lock three latches (Figure 3, Item 1) on gunner hatch front door (Figure 3, Item 3) and gunner hatch rear door (Figure 3, Item 4).

END OF TASK

OPERATING PROCEDURES

Front Deflector Shield Installation

WARNING

Front deflector shield is extremely heavy and requires two-person lift. Use extreme care when installing or removing front deflector shield in pintle. Failure to comply may result in serious injury or death to personnel.

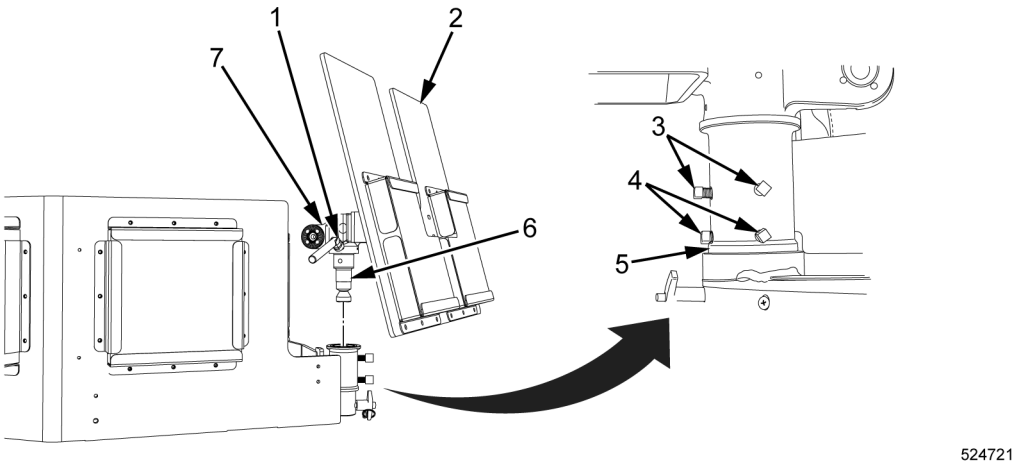


Figure 4. Front Deflector Shield Installation.

NOTE

Front deflector shield pintle pin should be secure when properly installed in bearing collar. Do not overtighten.

1. With assistant, install pintle pin (Figure 4, Item 6) on front deflector shield (Figure 4, Item 2) in bearing collar (Figure 4, Item 5).
2. Tighten two upper setscrews (Figure 4, Item 3) on bearing collar (Figure 4, Item 5) until tight, then back off upper setscrews 1/2 turn.
3. Tighten two lower setscrews (Figure 4, Item 4) on bearing collar (Figure 4, Item 5) until tight, then back off lower setscrews 1/2 turn.
4. Grasp weapon lock handle (Figure 4, Item 1) and rotate clockwise to lock weapon mount (Figure 4, Item 7).

END OF TASK

OPERATING PROCEDURES

Front Deflector Shield Removal

WARNING

Front deflector shield is extremely heavy and requires two-person lift. Use extreme care when installing or removing front deflector shield in pintle. Failure to comply may result in serious injury or death to personnel.

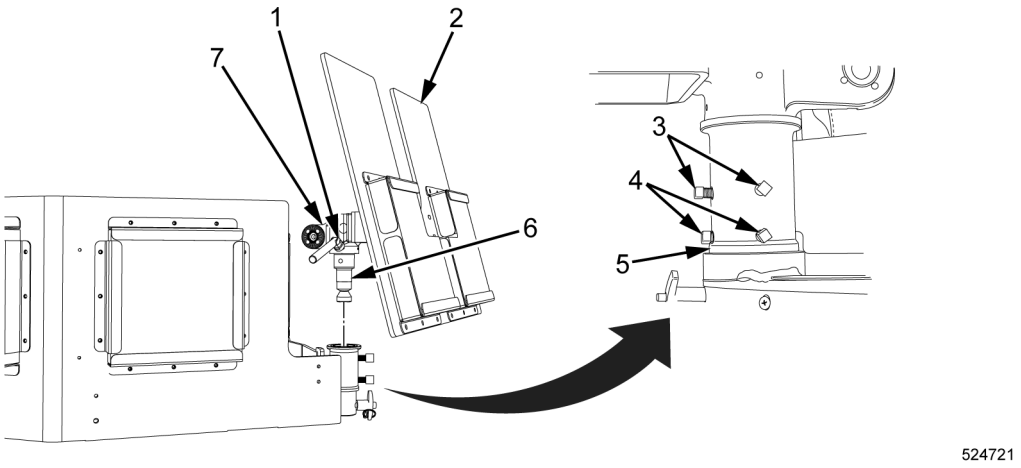


Figure 5. Front Deflector Shield Removal.

NOTE

Weapon mount must be unlocked to remove front deflector shield from bearing collar.

1. Grasp weapon lock handle (Figure 5, Item 1) and rotate counterclockwise to unlock weapon mount (Figure 5, Item 7).
2. Loosen two upper setscrews (Figure 5, Item 3) on bearing collar (Figure 5, Item 5) two to three turns.
3. Loosen two lower setscrews (Figure 5, Item 4) on bearing collar (Figure 5, Item 5) until heads on lower setscrews align with heads on upper setscrews (Figure 5, Item 3).
4. With assistant, remove pintle pin (Figure 5, Item 6) on front deflector shield (Figure 5, Item 2) from bearing collar (Figure 5, Item 5).

END OF TASK

OPERATING PROCEDURES

Padding Installation

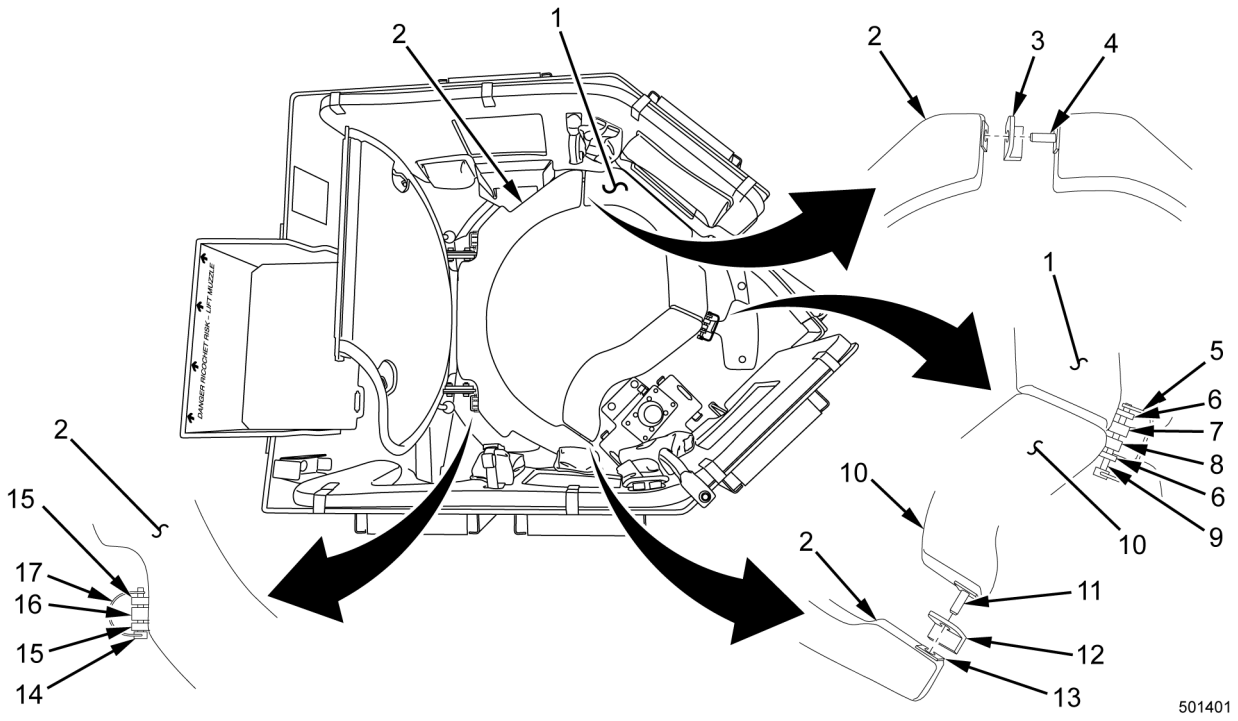


Figure 6. Padding Installation.

NOTE

Objective Gunners Protection Kit (OGPK) padding is located inside storage bag.

Gunner hatch cannot be closed with OGPK padding installed.

Commander side rear padding bracket shown; driver side similar.

1. Install rear gunner padding (Figure 6, Item 2) on two rear brackets (Figure 6, Item 15).
2. Install rear lock pin (Figure 6, Item 14) through two rear brackets (Figure 6, Item 15) and rear padding bracket (Figure 6, Item 16).
3. Install rear D-loop (Figure 6, Item 17) on rear lock pin (Figure 6, Item 14).
4. Repeat steps 2 and 3 for opposite side.
5. Install pin (Figure 6, Item 11) on commander side gunner padding (Figure 6, Item 10) in side bracket (Figure 6, Item 12) and hole (Figure 6, Item 13) on rear gunner padding (Figure 6, Item 2).
6. Install pin (Figure 6, Item 4) on driver side gunner padding (Figure 6, Item 1) in side bracket (Figure 6, Item 3) and rear gunner padding (Figure 6, Item 2).
7. Install lock pin (Figure 6, Item 9) through two front brackets (Figure 6, Item 6) and driver side gunner padding bracket (Figure 6, Item 7) and commander side gunner padding bracket (Figure 6, Item 8).
8. Install D-loop (Figure 6, Item 5) on lock pin (Figure 6, Item 9).

END OF TASK

OPERATING PROCEDURES

Padding Removal

NOTE

OGPK padding is stowed inside storage bag.

1. Remove D-loop (Figure 6, Item 5) from lock pin (Figure 6, Item 9).
2. Remove lock pin (Figure 6, Item 9) from two front brackets (Figure 6, Item 6), driver side gunner padding bracket (Figure 6, Item 7), and commander side gunner padding bracket (Figure 6, Item 8).
3. Remove driver side gunner padding (Figure 6, Item 1) from side bracket (Figure 6, Item 3) and rear gunner padding (Figure 6, Item 2).
4. Remove commander side gunner padding (Figure 6, Item 10) from side bracket (Figure 6, Item 12) and rear gunner padding (Figure 6, Item 2).
5. Remove rear D-loop (Figure 6, Item 17) from rear lock pin (Figure 6, Item 14).
6. Remove rear lock pin (Figure 6, Item 14) from two rear brackets (Figure 6, Item 15) and rear gunner padding bracket (Figure 6, Item 16).
7. Repeat steps 5 and 6 for opposite side.
8. Remove rear gunner padding (Figure 6, Item 2) from two rear brackets (Figure 6, Item 16).

END OF TASK

OPERATING PROCEDURES

Improved Turret Drive System (ITDS) Electrical Connector Connect

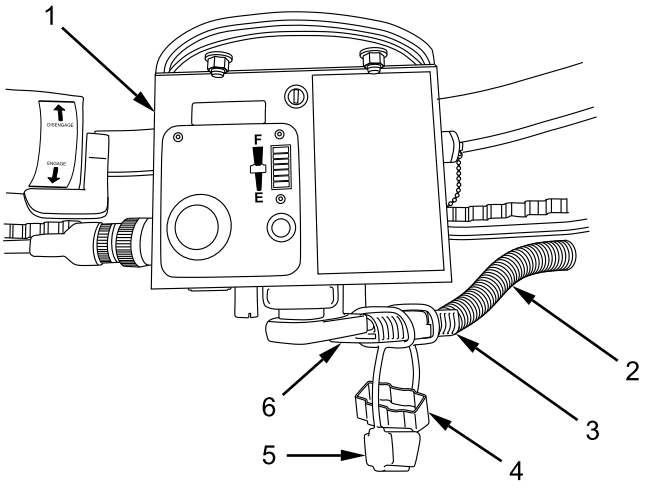


Figure 7. ITDS Electrical Connector Connect.

1. Remove cover (Figure 7, Item 5) from electrical connector (Figure 7, Item 6) on bottom of Improved Turret Drive System (ITDS) controller (Figure 7, Item 1).
2. Remove cover (Figure 7, Item 4) from electrical connector (Figure 7, Item 3) on battery charging cable (Figure 7, Item 2).
3. Connect electrical connector (Figure 7, Item 6) on bottom of ITDS controller (Figure 7, Item 1) to electrical connector (Figure 7, Item 3) on battery charging cable (Figure 7, Item 2).

END OF TASK

OPERATING PROCEDURES

ITDS Electrical Connector Disconnect

WARNING

ITDS electrical connector must be disconnected prior to turret operations. Traversing turret without disconnecting electrical connector can damage connector and cause electrical shock. Failure to comply may result in serious injury or death to personnel and damage to equipment.

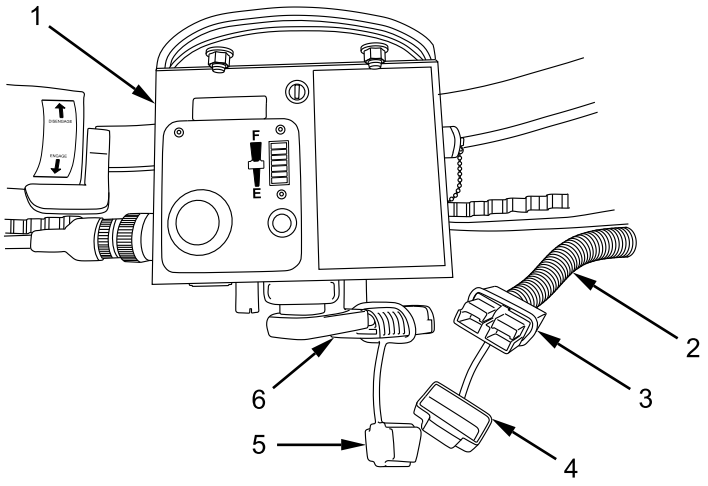


Figure 8. ITDS Electrical Connector Disconnect.

1. Disconnect electrical connector (Figure 8, Item 6) on bottom of ITDS controller (Figure 8, Item 1) from electrical connector (Figure 8, Item 3) on battery charging cable (Figure 8, Item 2).
2. Install cover (Figure 8, Item 4) on electrical connector (Figure 8, Item 3) on battery charging cable (Figure 8, Item 2).
3. Install cover (Figure 8, Item 5) on electrical connector (Figure 8, Item 6) on bottom of ITDS controller (Figure 8, Item 1).

END OF TASK

OPERATING PROCEDURES

Turret Motor Manual Operation

WARNING

ITDS electrical connector must be disconnected prior to turret operations. Traversing turret without disconnecting electrical connector can damage connector and cause electrical shock. Failure to comply may result in serious injury or death to personnel and damage to equipment.

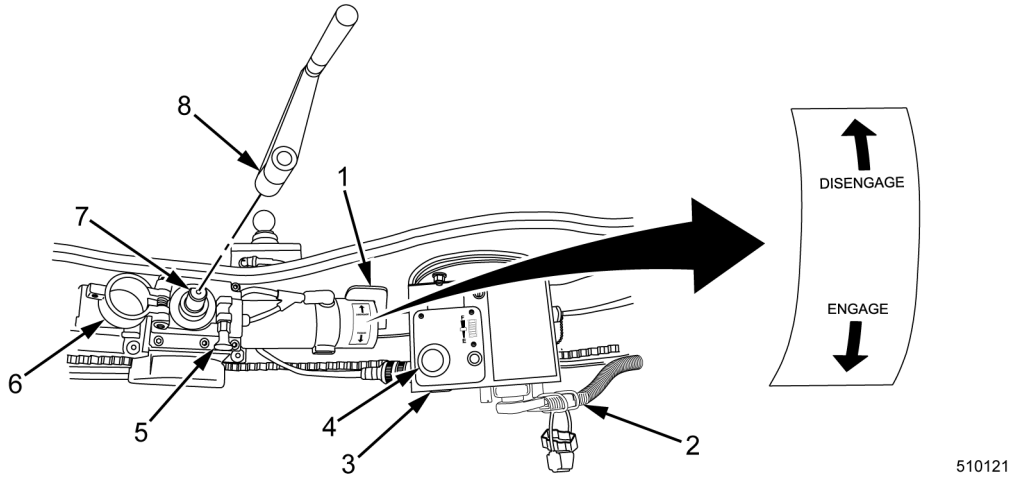


Figure 9. Turret Motor MANUAL Operation.

1. Push RED ITDS controller knob (Figure 9, Item 4) OFF.
2. Disconnect ITDS electrical connector (Figure 9, Item 2) from ITDS controller (Figure 9, Item 3).
3. Remove manual crank handle (Figure 9, Item 8) from storage location.
4. Pull handle shaft cover pin (Figure 9, Item 5) down.
5. Open handle shaft cover (Figure 9, Item 6).
6. Install manual crank handle (Figure 9, Item 8) on handle shaft (Figure 9, Item 7).
7. Push holding brake controller (Figure 9, Item 1) up to DISENGAGE.
8. Turn manual crank handle (Figure 9, Item 8) left or right to rotate turret.
9. Push holding brake controller (Figure 9, Item 1) down to ENGAGE and lock turret.
10. Remove manual crank handle (Figure 9, Item 8) from handle shaft (Figure 9, Item 7).
11. Pull handle shaft cover pin (Figure 9, Item 5) down.
12. Close handle shaft cover (Figure 9, Item 6).
13. Release handle shaft cover pin (Figure 9, Item 5).
14. Store manual crank handle (Figure 9, Item 8).

END OF TASK

OPERATING PROCEDURES

Turret Motor Power Operation

WARNING

ITDS electrical connector must be disconnected prior to turret operations. Traversing turret without disconnecting electrical connector can damage connector and cause electrical shock. Failure to comply may result in serious injury or death to personnel and damage to equipment.

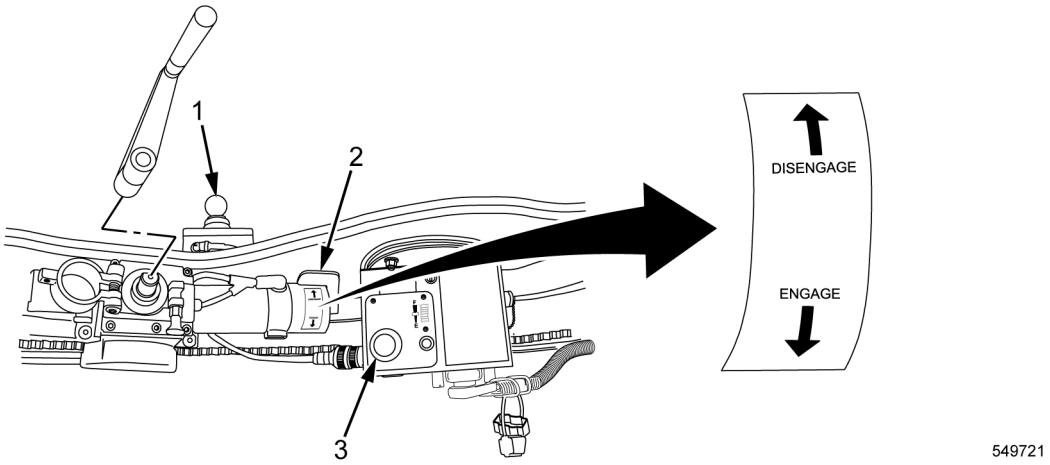


Figure 10. Turret Motor POWER Operation.

1. Pull RED ITDS controller knob (Figure 10, Item 3) ON.
2. Ensure holding brake controller (Figure 10, Item 2) is in ENGAGE.
3. Rotate turret using joystick controller (Figure 10, Item 1).
4. Push RED ITDS controller knob (Figure 10, Item 3) OFF.

END OF TASK

OPERATING PROCEDURES

Turret Lock

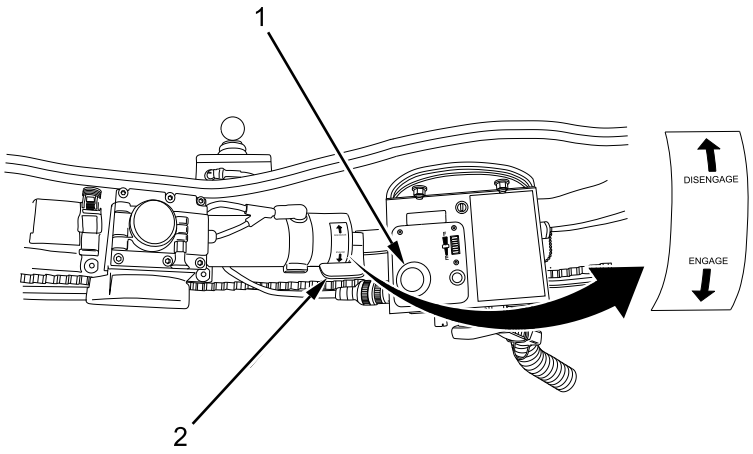


Figure 11. Lock Turret.

1. Push RED ITDS controller knob (Figure 11, Item 1) OFF.
2. Push holding brake controller (Figure 11, Item 2) down to ENGAGE and lock turret.

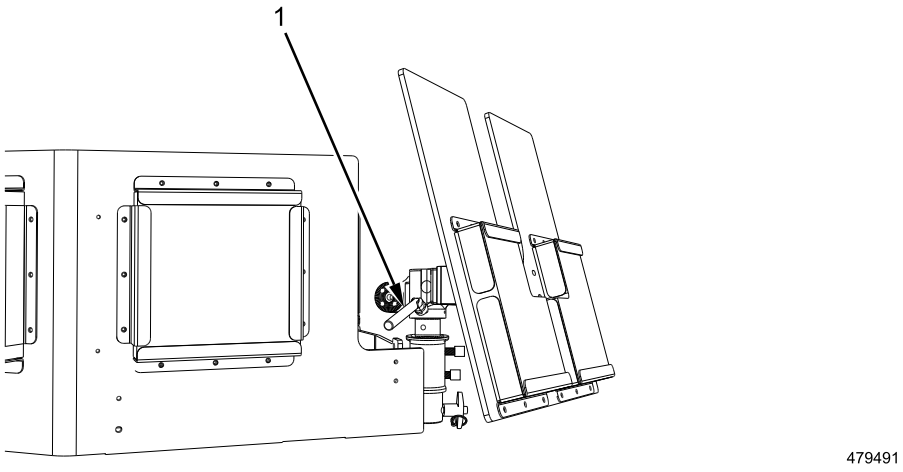


Figure 12. Lock Weapon Mount.

3. Grasp weapon lock handle (Figure 12, Item 1) and rotate clockwise to lock weapon mount.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - LIFE SUPPORT SYSTEM (LSS)/HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) OPERATION

INITIAL SETUP:

References
WP 0013

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

OPERATING PROCEDURES

WARNING

Carbon monoxide is a colorless, odorless, and dangerous gas that deprives the body of oxygen and causes suffocation. Use the following precautions to avoid carbon monoxide poisoning. Failure to comply may result in permanent brain damage or death to personnel. Do not idle engine for long periods of time. If necessary to run engine in confined area during vehicle service, use proper equipment to vent exhaust gasses outside work area. Do not sleep in vehicle with heater operating or engine idling. Do not operate fuel fired heater in enclosed area without adequate ventilation. Notify Field Level Maintenance if exhaust fumes are detected in passenger compartment while operating the vehicle. Be alert at all times for exhaust odors and symptoms of exposure to carbon monoxide, such as headaches, dizziness, loss of muscular control, apparent drowsiness, and coma. If symptoms are evident, move affected personnel to fresh air, keep them warm, do not permit physical exercise, administer artificial respiration (if necessary), and seek immediate medical attention.

Air inlet must be open and the ventilation system must be circulating fresh or recirculated air within the vehicle. Operation with inadequate ventilation (ventilation system set improperly) could create an oxygen deficient atmosphere, which could lead to occupant incapacitation. Failure to comply could cause serious injury to personnel.

CAUTION

Do not operate LSS/HVAC system for prolonged periods while engine is not running. Operating LSS/HVAC without engine running may deplete batteries. Failure to comply may result in damage to equipment.

NOTE

If another mode of Life Support System (LSS)/Heating, Ventilation, and Air Conditioning (HVAC) operation is desired, the mode can be selected using the LSS/HVAC switch. Otherwise, the LSS/HVAC system can be shut off.

There are four vent openings on the front soft duct and 11 vent openings on the soft duct in the patient/passenger area.

NBC switch on LSS/HVAC control panel is not functional.

VENT Mode Operation

NOTE

Operating LSS/HVAC system with engine running enables temperature control of circulated air. Operating LSS/HVAC with engine shut down circulates air at ambient temperatures.

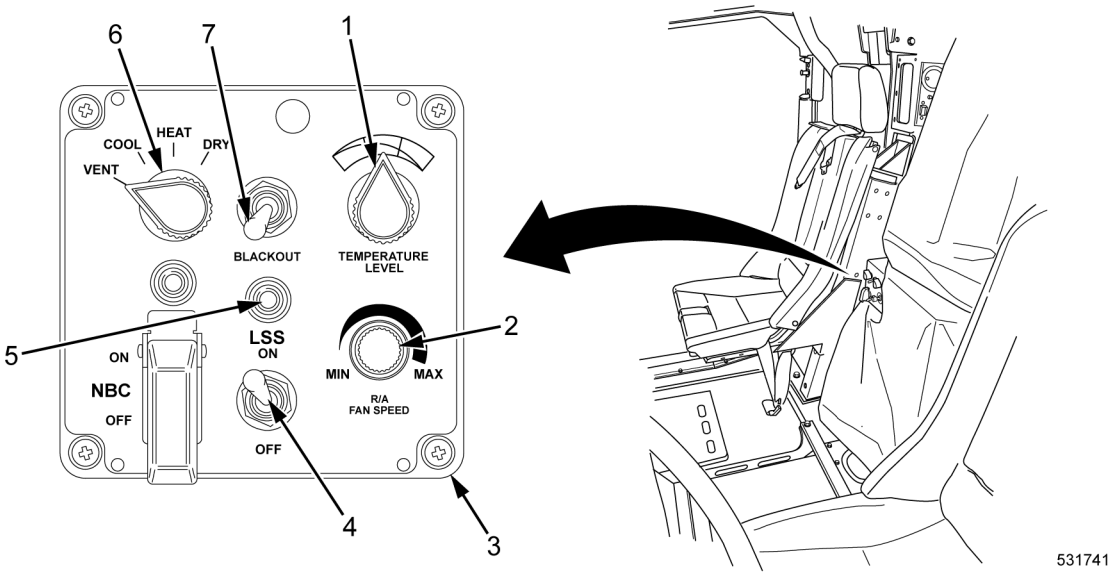


Figure 1. LSS/HVAC Controls.

1. Push LSS ON/OFF switch (Figure 1, Item 4) ON. LSS GREEN indicator (Figure 1, Item 5) on LSS/HVAC control panel (Figure 1, Item 3) will illuminate.
2. Turn LSS/HVAC switch (Figure 1, Item 6) to VENT position.

NOTE

VENT mode circulates fresh air when the engine is running or not. TEMPERATURE LEVEL control knob does not function when engine is not running

3. Turn TEMPERATURE LEVEL control knob (Figure 1, Item 1) left or right to adjust temperature of cabin air relative to ambient air.
4. Turn R/A FAN SPEED knob (Figure 1, Item 2) to increase or decrease the flow of air.
5. For blackout operations, push BLACKOUT switch (Figure 1, Item 7) DOWN. LSS GREEN indicator (Figure 1, Item 5) on LSS/HVAC control panel (Figure 1, Item 3) will deactivate.

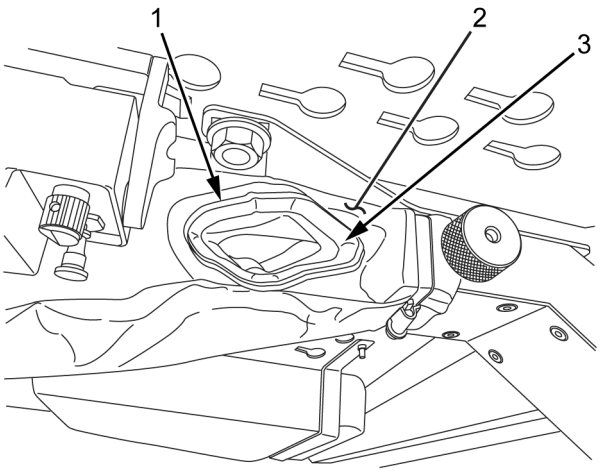


Figure 2. Soft Duct Vent Opening.

NOTE

One soft duct vent opening shown; all others similar.

6. Pull hook and loop fastener (Figure 2, Item 3) to open soft duct vent opening (Figure 2, Item 1) allowing flow of air from soft duct (Figure 2, Item 2).
7. Push hook and loop fastener (Figure 2, Item 3) together to close soft duct vent opening (Figure 2, Item 1) stopping flow of air from soft duct (Figure 2, Item 2).
8. At end of blackout operations, push BLACKOUT switch (Figure 1, Item 7) UP. LSS GREEN indicator (Figure 1, Item 5) on LSS/HVAC control panel (Figure 1, Item 3) will activate.
9. To shut off the LSS/HVAC system, push LSS ON/OFF switch (Figure 1, Item 4) OFF. The LSS GREEN indicator (Figure 1, Item 5) on LSS/HVAC control panel (Figure 1, Item 3) will deactivate.

END OF TASK

OPERATING PROCEDURES

COOL Mode Operation

NOTE

Operating LSS/HVAC system with engine running enables temperature control of circulated air.

COOL mode will not operate unless cabin temperature is above 67°F (19°C).

In COOL mode, engine speed increases to 1300 rpm within 10 seconds if vehicle transmission is in NEUTRAL (N).

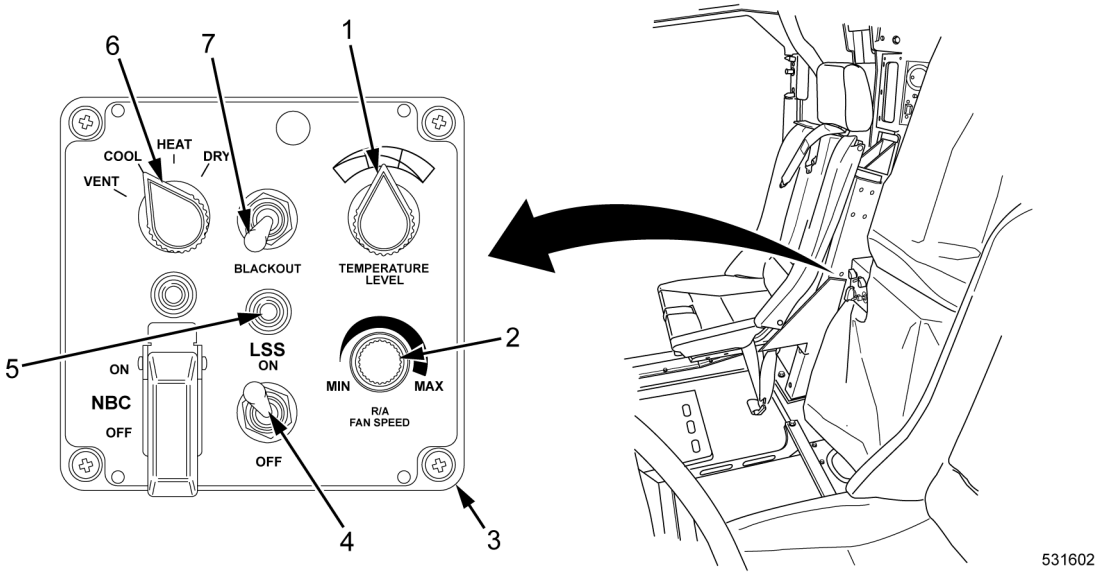


Figure 3. LSS/HVAC Controls.

1. Push LSS ON/OFF switch (Figure 3, Item 4) ON. LSS GREEN indicator (Figure 3, Item 5) on LSS/HVAC control panel (Figure 3, Item 3) will illuminate.
2. Turn LSS/HVAC switch (Figure 3, Item 6) to COOL position.
3. Turn TEMPERATURE LEVEL control knob (Figure 3, Item 1) left or right to adjust temperature of cabin air relative to ambient air.
4. Turn R/A FAN SPEED knob (Figure 3, Item 2) to increase or decrease the flow of air.
5. For blackout operations, push BLACKOUT switch (Figure 3, Item 7) DOWN. LSS GREEN indicator (Figure 3, Item 5) on LSS/HVAC control panel (Figure 3, Item 3) will deactivate.

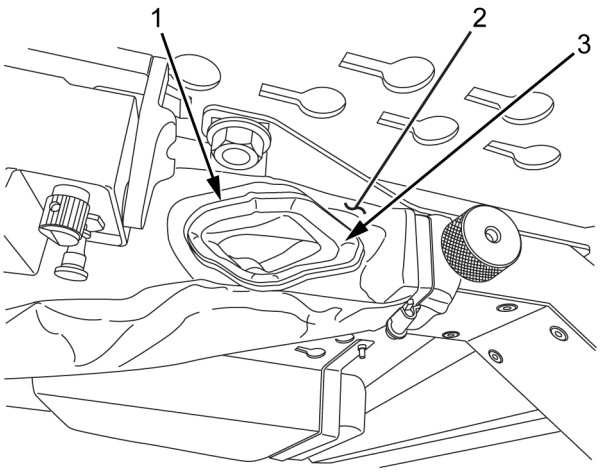


Figure 4. Soft Duct Vent Opening.

NOTE

One soft duct vent opening shown; all others similar.

6. Pull hook and loop fastener (Figure 4, Item 3) to open soft duct vent opening (Figure 4, Item 1) allowing flow of air from soft duct (Figure 4, Item 2).
7. Push hook and loop fastener (Figure 4, Item 3) together to close soft duct vent opening (Figure 4, Item 1) stopping flow of air from soft duct (Figure 4, Item 2).
8. At end of blackout operations, push BLACKOUT switch (Figure 3, Item 7) UP. LSS GREEN indicator (Figure 3, Item 5) on LSS/HVAC control panel (Figure 3, Item 3) will activate.
9. To shut off the LSS/HVAC system, push the LSS ON/OFF switch (Figure 3, Item 4) OFF. The LSS GREEN indicator (Figure 3, Item 5) on LSS/HVAC control panel (Figure 3, Item 3) will deactivate.

END OF TASK

OPERATING PROCEDURES

HEAT Mode Operation

NOTE

Operating LSS/HVAC system with engine running enables temperature control of circulated air.

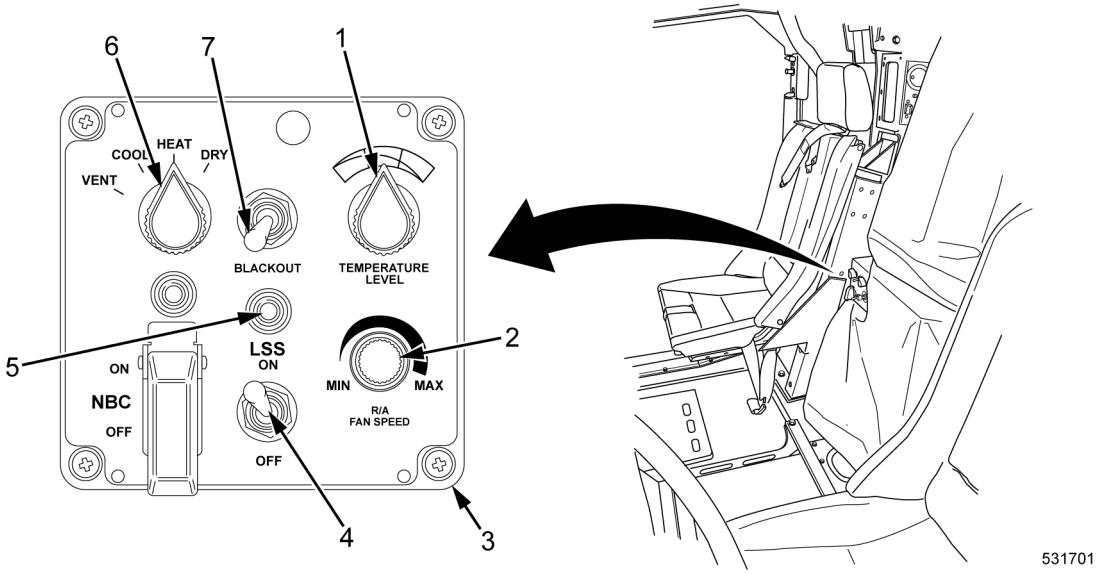


Figure 5. LSS/HVAC Controls.

1. Push LSS ON/OFF switch (Figure 5, Item 4) to ON. LSS GREEN indicator (Figure 5, Item 5) on LSS/HVAC control panel (Figure 5, Item 3) will illuminate.
2. Turn LSS/HVAC switch (Figure 5, Item 6) to HEAT position.
3. Turn TEMPERATURE LEVEL control knob (Figure 5, Item 1) left or right to adjust temperature of cabin air relative to ambient air.
4. Turn R/A FAN SPEED knob (Figure 5, Item 2) to increase or decrease the flow of air.
5. For blackout operations, push BLACKOUT switch (Figure 5, Item 7) DOWN. LSS GREEN indicator (Figure 5, Item 5) on LSS/HVAC control panel (Figure 5, Item 3) will deactivate.

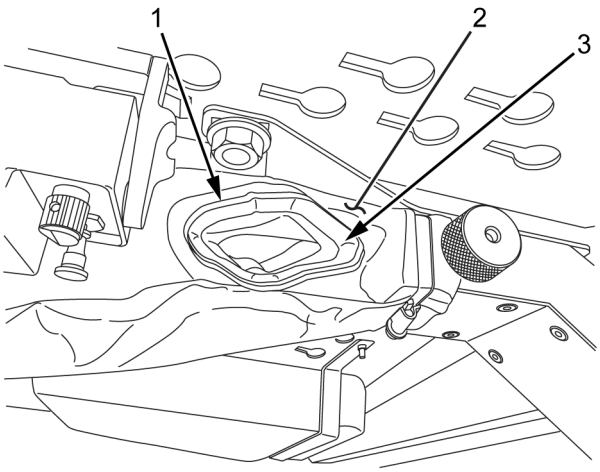


Figure 6. Soft Duct Vent Opening.

NOTE

One soft duct vent opening shown; all others similar.

6. Pull hook and loop fastener (Figure 6, Item 3) to open soft duct vent opening (Figure 6, Item 1) allowing flow of air from soft duct (Figure 6, Item 2).
7. Push hook and loop fastener (Figure 6, Item 3) together to close soft duct vent opening (Figure 6, Item 1) stopping flow of air from soft duct (Figure 6, Item 2).
8. At end of blackout operations, push BLACKOUT switch (Figure 5, Item 7) UP. LSS GREEN indicator (Figure 5, Item 5) on LSS/HVAC control panel (Figure 5, Item 3) will activate.
9. To shut off the LSS/HVAC system, push the LSS ON/OFF switch (Figure 5, Item 4) to OFF. The LSS GREEN indicator (Figure 5, Item 5) on LSS/HVAC control panel (Figure 5, Item 3) will deactivate.

END OF TASK

OPERATING PROCEDURES

DRY (Defrost) Mode Operation

NOTE

Operating LSS/HVAC system with engine running enables temperature control of circulated air.

In DRY mode, engine speed increases to 1300 rpm within 10 seconds if vehicle transmission is in NEUTRAL (N).

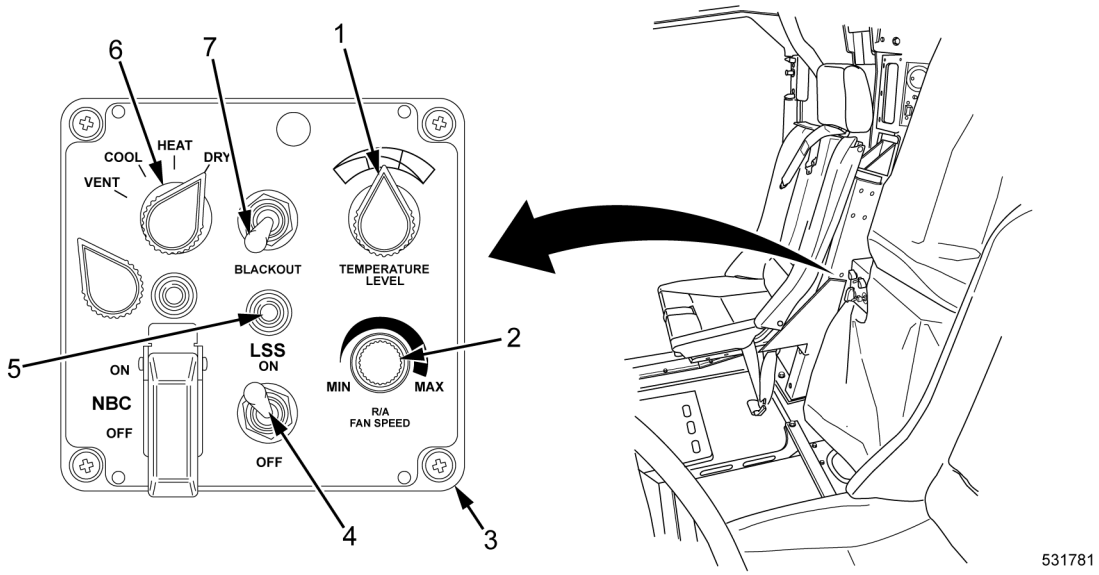


Figure 7. LSS/HVAC Controls.

1. Push LSS ON/OFF switch (Figure 7, Item 4) to ON. LSS GREEN indicator (Figure 7, Item 5) on LSS/HVAC control panel (Figure 7, Item 3) will illuminate.
2. Turn LSS/HVAC switch (Figure 7, Item 6) to DRY position.
3. Turn TEMPERATURE LEVEL control knob (Figure 7, Item 1) left or right to adjust temperature of cabin air relative to ambient air.
4. Turn R/A FAN SPEED knob (Figure 7, Item 2) to increase or decrease the flow of air.
5. For blackout operations, push BLACKOUT switch (Figure 7, Item 7) DOWN. LSS GREEN indicator (Figure 7, Item 5) on LSS/HVAC control panel (Figure 7, Item 3) will deactivate.
6. At end of blackout operations, push BLACKOUT switch (Figure 7, Item 7) UP. LSS GREEN indicator (Figure 7, Item 5) on LSS/HVAC control panel (Figure 7, Item 3) will activate.

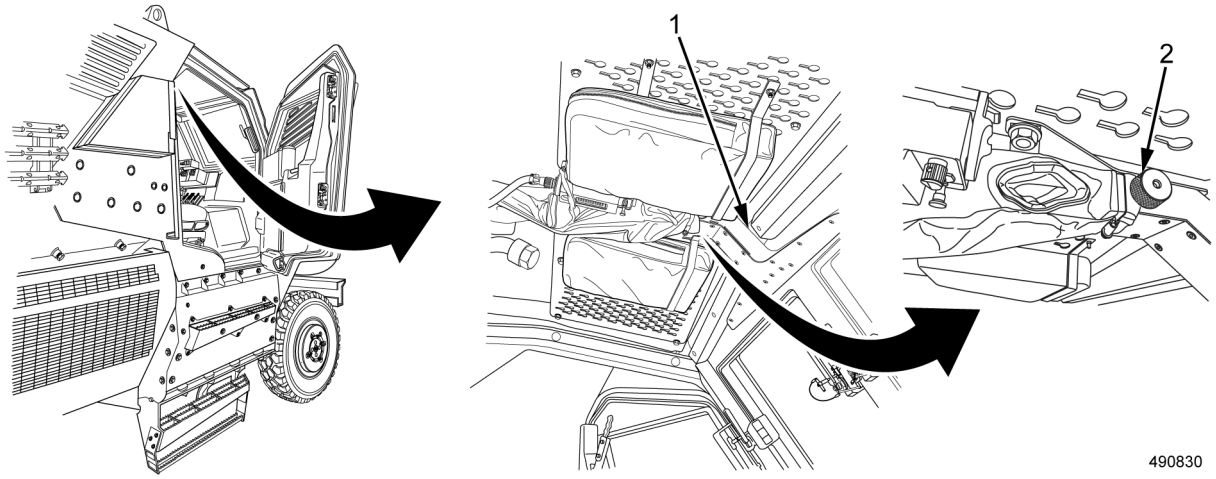


Figure 8. LSS/HVAC Windshield Defrost Duct.

7. Turn windshield defrost duct control knob (Figure 8, Item 2) counterclockwise to divert airflow through windshield defrost duct (Figure 8, Item 1) toward the windshield.
8. When DRY mode is no longer required, turn windshield defrost duct control knob (Figure 8, Item 2) clockwise to stop airflow through windshield defrost duct (Figure 8, Item 1).

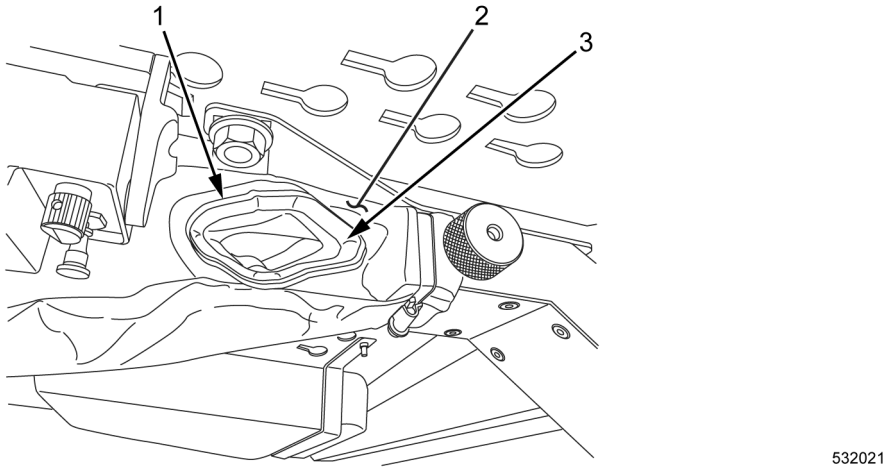


Figure 9. Soft Duct Vent Opening.

NOTE

Air will flow from all soft duct vent openings when LSS/HVAC is in DRY mode.

One soft duct vent opening shown; all others similar.

9. Pull hook and loop fastener (Figure 9, Item 3) to open soft duct vent opening (Figure 9, Item 1) allowing flow of air from soft duct (Figure 9, Item 2).
10. Push hook and loop fastener (Figure 9, Item 3) together to close soft duct vent opening (Figure 9, Item 1) stopping flow of air from soft duct (Figure 9, Item 2).

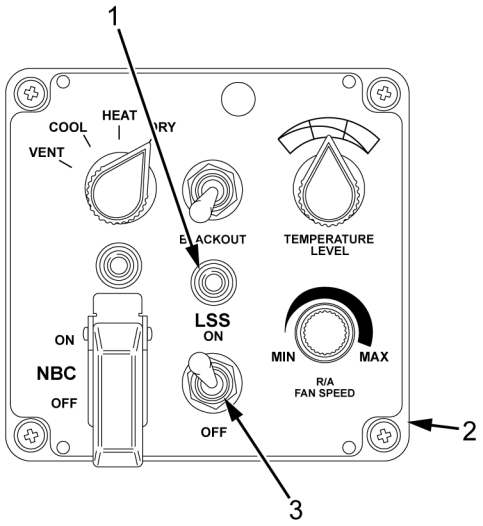


Figure 10. LSS/HVAC Controls.

11. To shut off the LSS/HVAC system, push the LSS ON/OFF switch (Figure 10, Item 3) to OFF. The LSS GREEN indicator (Figure 10, Item 1) on LSS/HVAC control panel (Figure 10, Item 2) will deactivate.

Follow-On Maintenance

Shutdown engine (WP 0013).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - FRONT PASSENGER LIGHT OPERATION

INITIAL SETUP:

References
WP 0004

OPERATING PROCEDURES

NOTE

The front passenger light can be used mounted to the roof or as a portable unit.

Passenger lights will flicker under normal operation when vehicle engine is off and vehicle battery charge drops below 21.5V on 24V battery gauge. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

Roof-Mount Mode

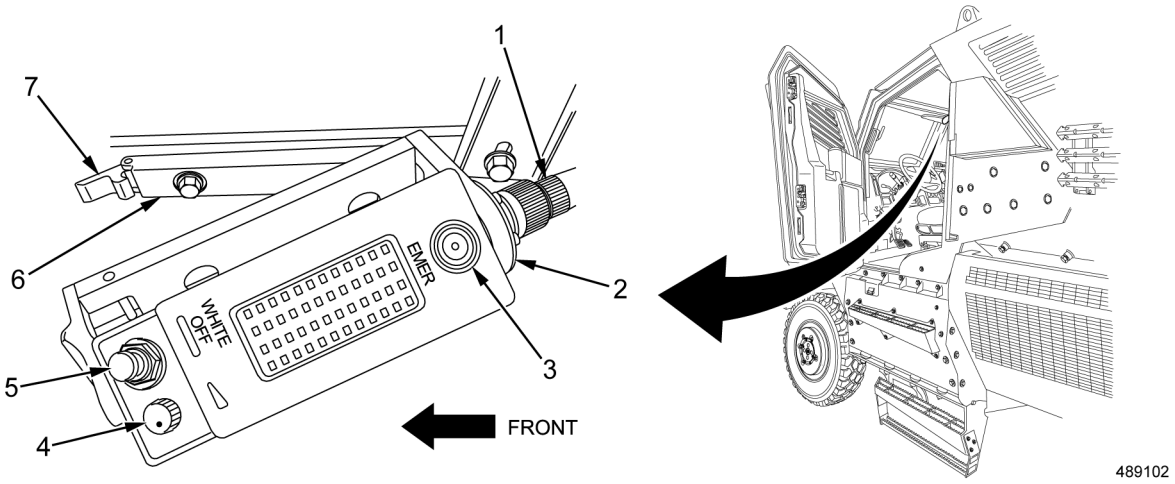


Figure 1. Front Passenger Light Roof Mount Mode.

1. Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. To illuminate GREEN LED light, push toggle switch (Figure 1, Item 5) away from front passenger light (Figure 1, Item 2).
3. Turn BLACK knob (Figure 1, Item 4) clockwise to brighten and counterclockwise to dim front passenger light (Figure 1, Item 2).
4. To illuminate WHITE LED light, pull toggle switch (Figure 1, Item 5) and push toward front passenger light (Figure 1, Item 2).
5. Turn BLACK knob (Figure 1, Item 4) clockwise to brighten and counterclockwise to dim front passenger light (Figure 1, Item 2).
6. Turn front passenger light (Figure 1, Item 2) OFF by pushing toggle switch (Figure 1, Item 5) to middle position.
7. Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

NOTE

EMER defaults to GREEN when initially activated, even in WHITE position.

Repeating Step 8 will illuminate light for an additional 30 seconds.

8. With vehicle power off, pressing EMER button (Figure 1, Item 3) will illuminate GREEN emergency light for 30 seconds, or pull toggle (Figure 1, Item 5) and push toward front passenger light (Figure 1, Item 2) to illuminate WHITE light for 30 seconds. The lamp will auto power off.

END OF TASK

OPERATING PROCEDURES

Portable Mode

WARNING

Support front passenger light before unlatching retaining bracket latch to prevent front passenger light from free-falling. Failure to comply may result in serious injury to personnel.

NOTE

Front passenger light internal battery recharges from vehicle electrical system. EMER button RED LED flickers slowly to indicate battery is charging in WHITE mode only.

Internal battery is fully charged when EMER button RED LED stops flickering.

Internal battery is defective when EMER button RED LED flickers rapidly.

1. Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. While supporting front passenger light (Figure 1, Item 2), push and release front latch (Figure 1, Item 7).
3. Pull front passenger light (Figure 1, Item 2) away from retaining bracket (Figure 1, Item 6).
4. Unscrew and disconnect electrical connector (Figure 1, Item 1) from front passenger light (Figure 1, Item 2).

END OF TASK

OPERATING PROCEDURES

Lamp Operation

1. Press EMER button (Figure 1, Item 3) once to illuminate front passenger light (Figure 1, Item 2) GREEN for 30 seconds.
2. Press EMER button (Figure 1, Item 3) twice to illuminate front passenger light (Figure 1, Item 2) GREEN indefinitely.
3. Turn BLACK knob (Figure 1, Item 4) clockwise to brighten and counterclockwise to dim front passenger light (Figure 1, Item 2).
4. Pull out toggle switch (Figure 1, Item 5) and push toward front passenger light (Figure 1, Item 2) to illuminate WHITE LED light.
5. Turn BLACK knob (Figure 1, Item 4) clockwise to brighten and counterclockwise to dim front passenger light (Figure 1, Item 2).
6. Turn front passenger light (Figure 1, Item 2) OFF by pushing toggle switch (Figure 1, Item 5) to middle position.

END OF TASK

OPERATING PROCEDURES

Lamp Installation

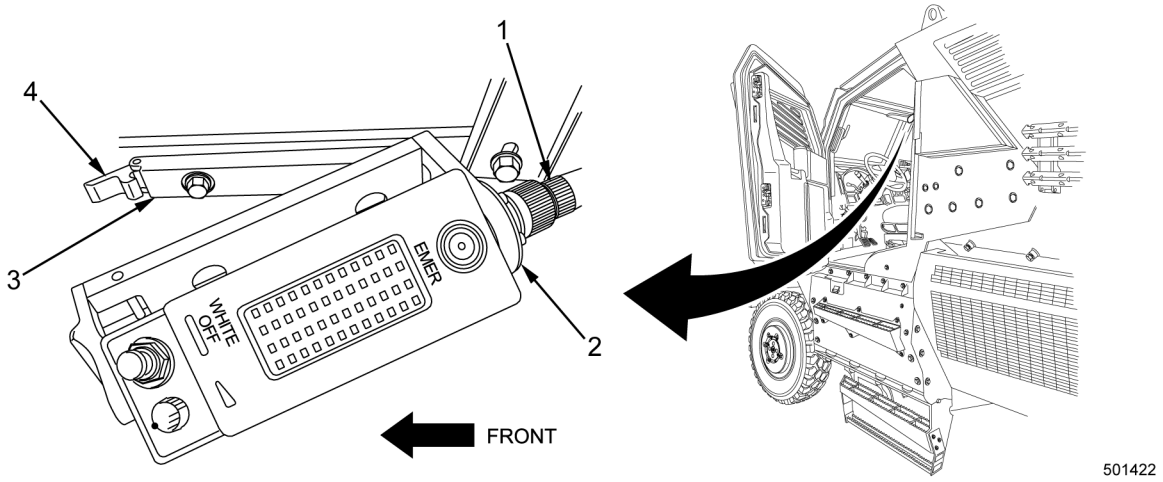


Figure 2. Front Passenger Light Portable Mode.

1. Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. Connect electrical connector (Figure 2, Item 1) to front passenger light (Figure 2, Item 2).
3. Position rear of front passenger light (Figure 2, Item 2) on retaining bracket (Figure 2, Item 3).
4. Press and hold front latch (Figure 2, Item 4) open and push front passenger light (Figure 2, Item 2) firmly into bracket (Figure 2, Item 3).
5. Release front latch (Figure 2, Item 4) to lock front passenger light (Figure 2, Item 2) into position.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - REAR PASSENGER LIGHTS OPERATION

INITIAL SETUP:

References
WP 0018

OPERATING PROCEDURES

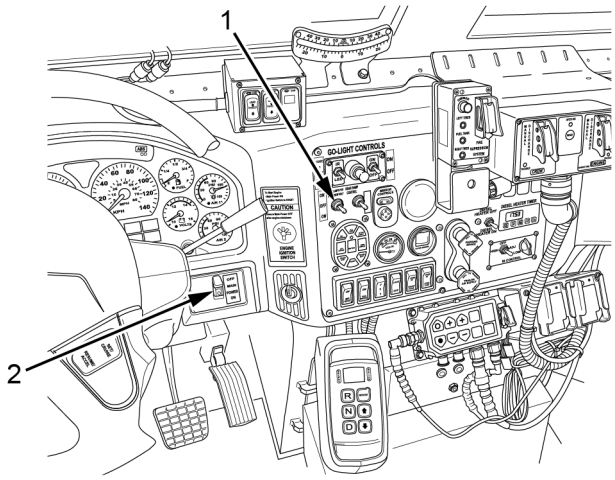


Figure 1. Rear Passenger Dome Lamp Toggle Switch Operation.

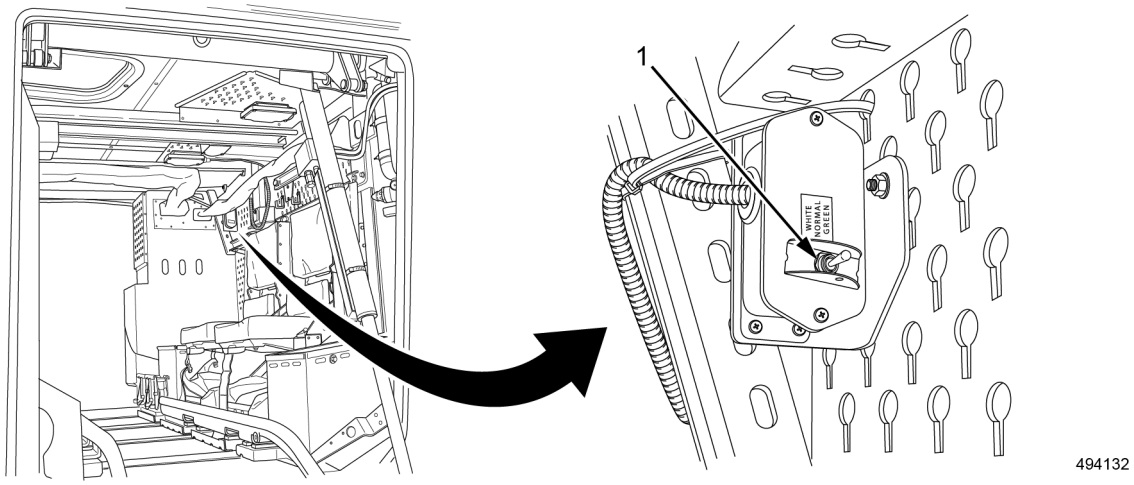


Figure 2. Rear Passenger Interior Light Switch Operation.

NOTE

The rear passenger interior light switch will override green lighting.

1. Set MAIN POWER switch (Figure 1, Item 2) to ON.
2. Pull rear passenger DOME LAMP toggle switch (Figure 1, Item 1) and push down to ON position.
   a. With rear passenger interior light switch set to WHITE (Figure 2, Item 1) rear lights will illuminate WHITE.
   b. With rear passenger interior light switch set to NORMAL or GREEN (Figure 2, Item 1) rear lights will illuminate GREEN.
3. Pull rear passenger DOME LAMP toggle switch (Figure 1, Item 1) and push up to ON position.
   a. With rear passenger interior light switch set to WHITE (Figure 2, Item 1) rear lights will illuminate WHITE.
   b. With rear passenger interior light switch set to GREEN (Figure 2, Item 1) rear lights will illuminate GREEN.
   c. With rear passenger interior light switch set to NORMAL (Figure 2, Item 1) rear lights will illuminate GREEN with rear door/ramp open and WHITE with rear door/ramp closed. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation.

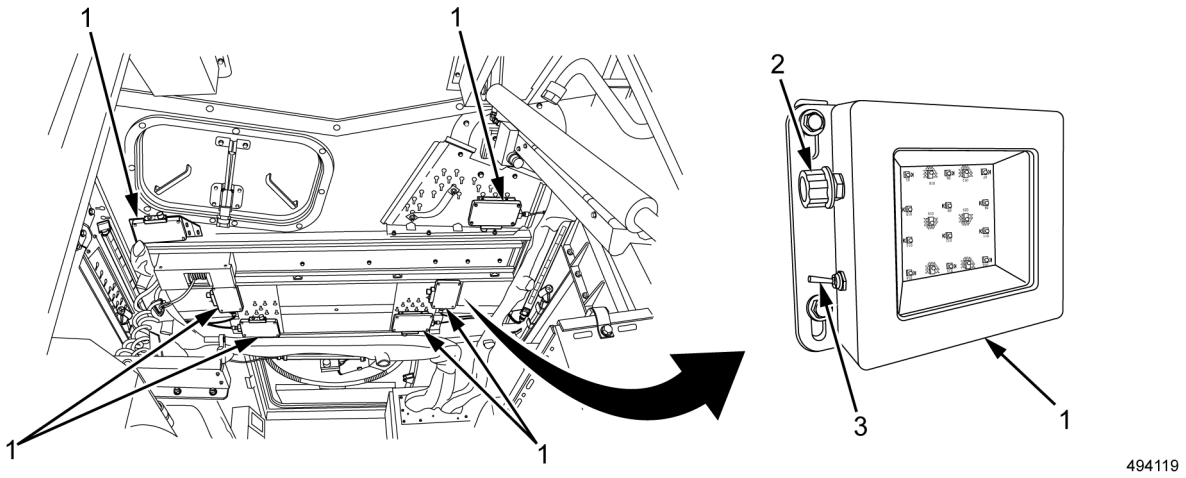


Figure 3. Rear Passenger Dome Light.

NOTE

There are six dome lights located in the rear interior.

4. Use knob (Figure 3, Item 2) to dim rear passenger dome light (Figure 3, Item 1).
5. Set ON/OFF switch (Figure 3, Item 3) to ON to illuminate dome light based on DOME LAMP toggle and interior light switch settings.
6. Set ON/OFF switch (Figure 3, Item 3) to OFF to turn dome light OFF regardless of previous DOME LAMP toggle and interior light switch settings.

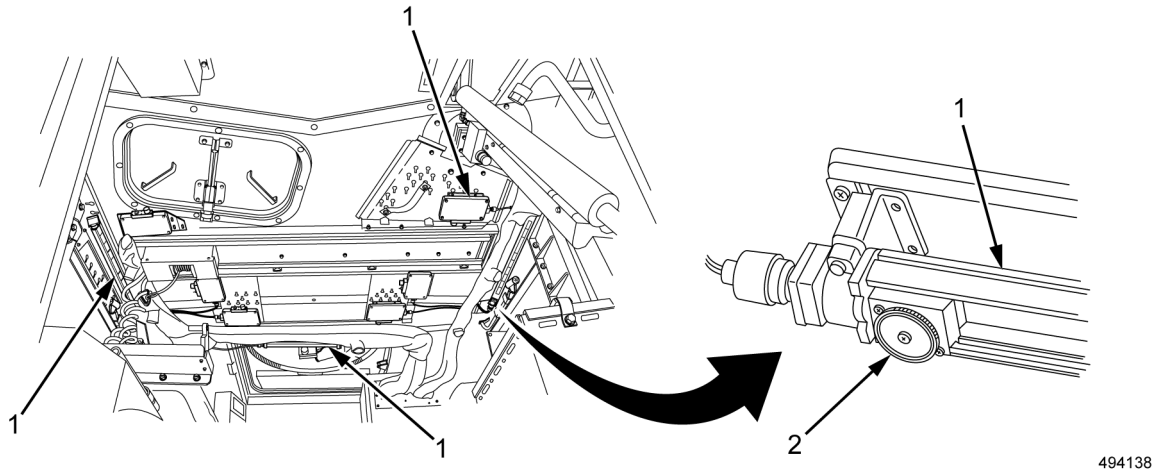


Figure 4. Rear Passenger Task Bar Light.

NOTE

There are three task bar lights located in the rear interior.

7. Use knob (Figure 4, Item 2) to dim or turn off task bar light (Figure 4, Item 1).

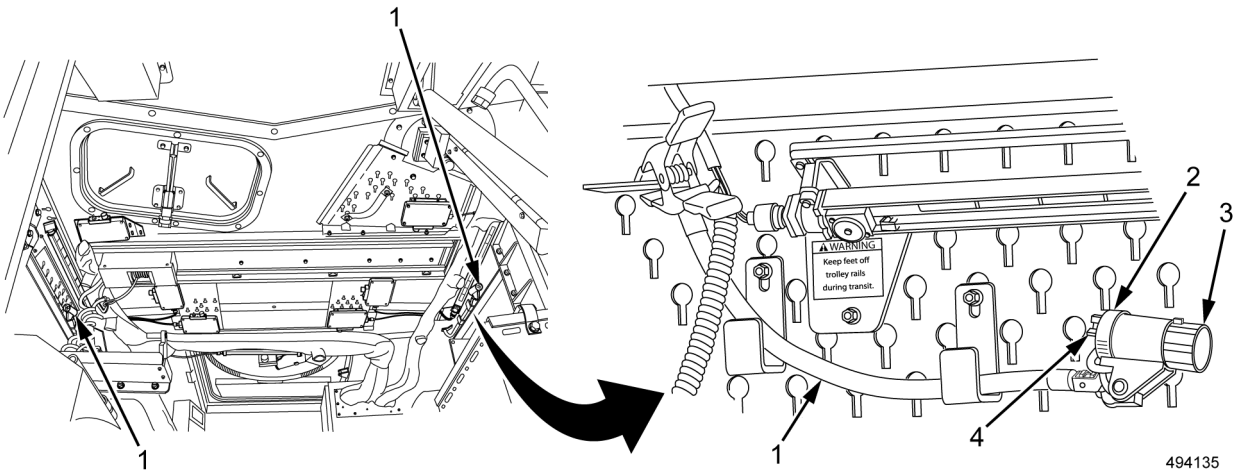


Figure 5. Rear Passenger Task Light.

NOTE

There are two task lights located in the rear interior.

8. Use task light switch (Figure 5, Item 4) to dim or turn off task light (Figure 5, Item 1).
9. Use Spot/Flood Function switch (Figure 5, Item 2) to change light output from spot to flood beam.
10. Use White/Blackout Function switch (Figure 5, Item 3) to change from WHITE to GREEN illumination.

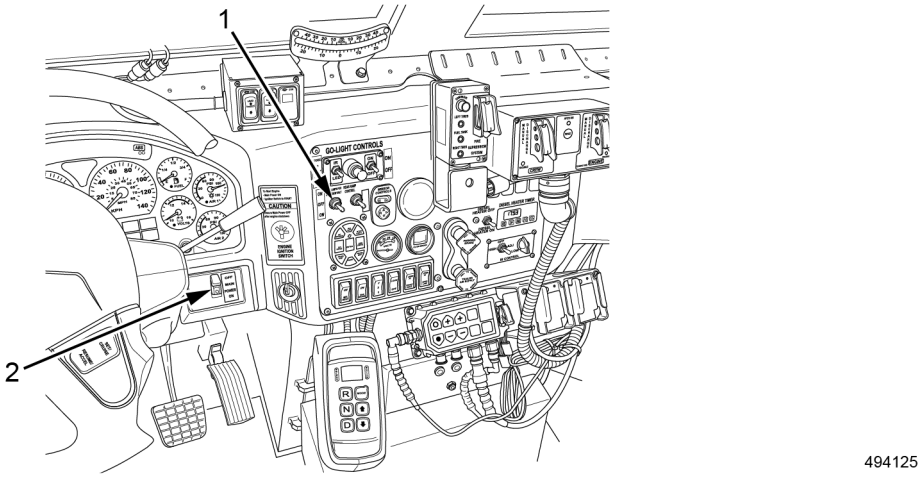


Figure 6. Rear Passenger Dome Lamp Power OFF.

11. Pull rear passenger DOME LAMP toggle switch (Figure 6, Item 1) and move to center OFF position.
12. Turn MAIN POWER switch (Figure 6, Item 2) OFF.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - SPOTLIGHT OPERATION

INITIAL SETUP:

NOT APPLICABLE

OPERATING PROCEDURES

Spotlight ON

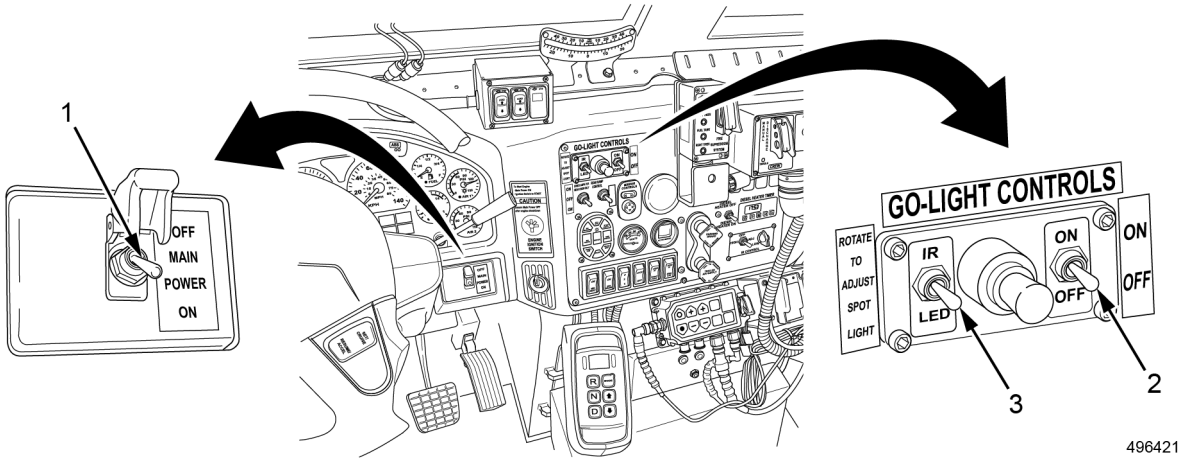


Figure 1. Spotlight Controls.

1. Turn MAIN POWER switch (Figure 1, Item 1) ON.
2. Move GO-LIGHT CONTROLS spotlight IR/LED switch (Figure 1, Item 3) down to turn spotlight to LED mode.
3. Move GO-LIGHT CONTROLS spotlight ON/OFF switch (Figure 1, Item 2) up to turn spotlight ON.

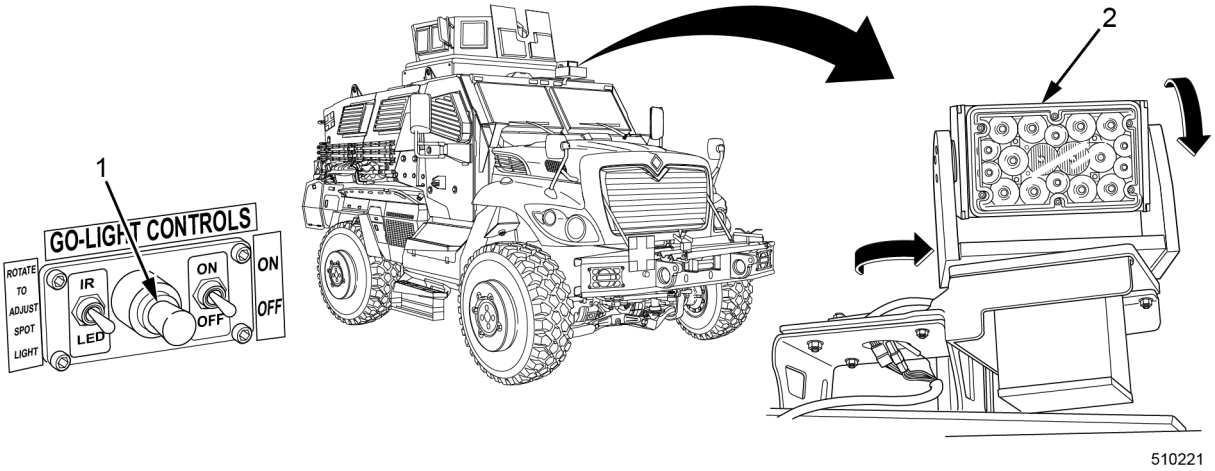


Figure 2. Spotlight.

4. Use GO-LIGHT CONTROLS joystick (Figure 2, Item 1) to rotate spotlight (Figure 2, Item 2).

END OF TASK

OPERATING PROCEDURES

Spotlight OFF

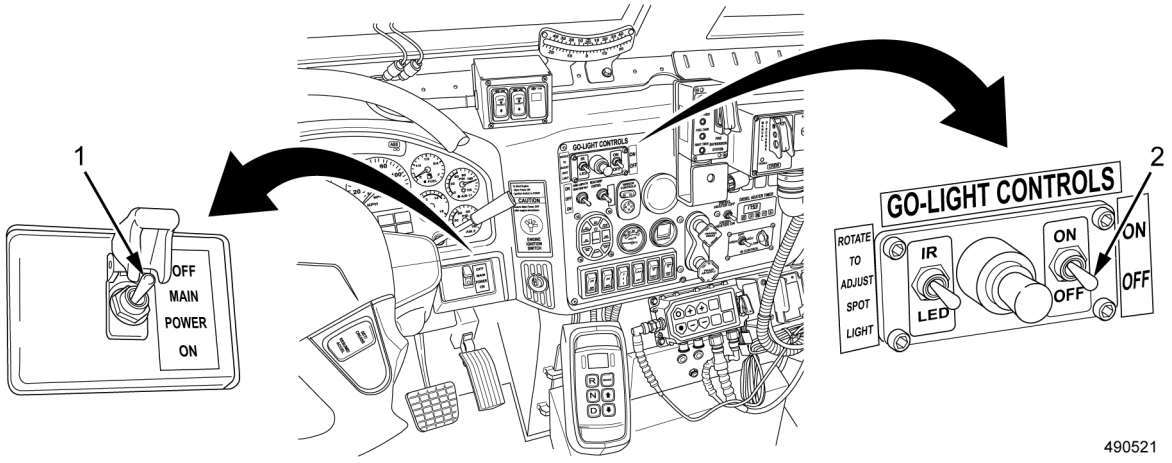


Figure 3. Spotlight Controls.

1. Move GO-LIGHT CONTROLS spotlight ON/OFF switch (Figure 3, Item 2) down to turn spotlight OFF.
2. Turn MAIN POWER switch (Figure 3, Item 1) OFF.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - CRUISE CONTROL OPERATION

INITIAL SETUP:

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)
Parking brake released (WP 0012)
Transmission set in DRIVE (D) (WP 0012)

OPERATING PROCEDURES

WARNING

Do not use cruise control system in heavy traffic or on roads that are winding, snow or ice covered, or have a slippery or loose surface. Unpredictable driving conditions may cause wheel slippage and loss of vehicle control. Failure to comply may result in serious injury or death to personnel.

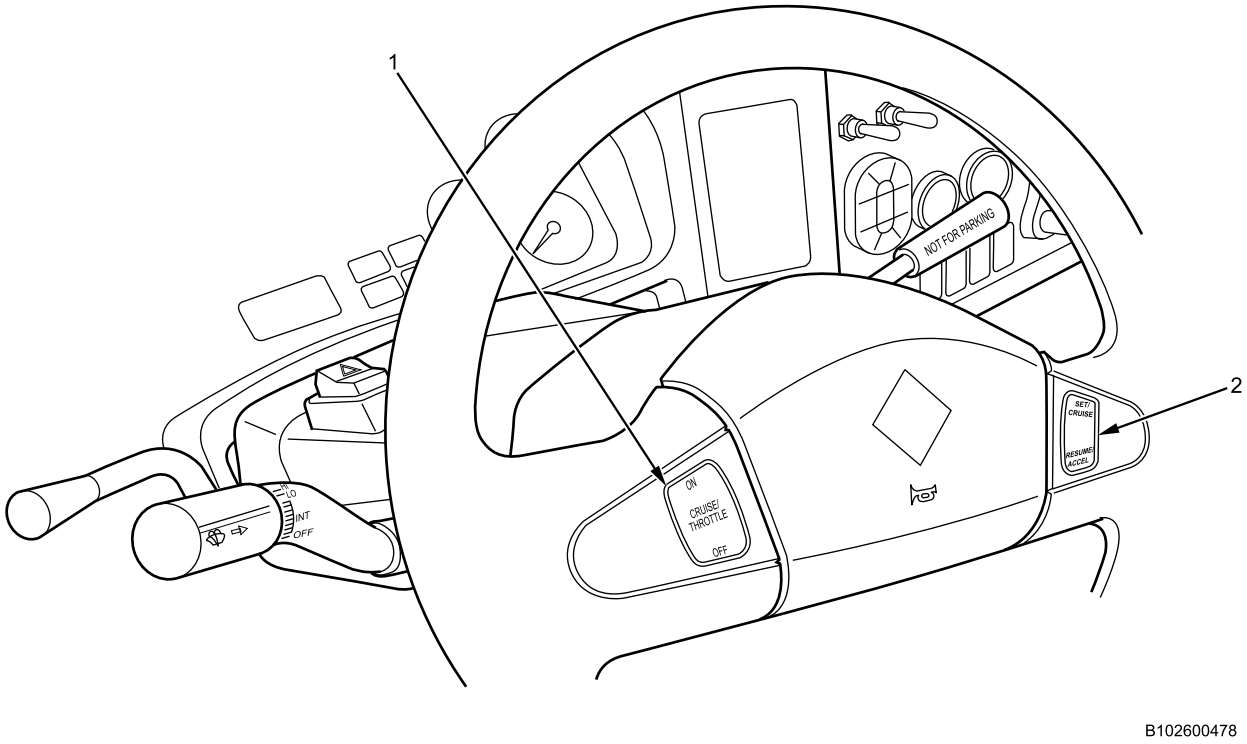


Figure 1. Cruise Control Switches.

NOTE

CRUISE/THROTTLE switch activates and deactivates the cruise control and throttle control system. SET/CRUISE, RESUME/ACCEL switch sets and controls vehicle speed when cruise control and throttle control system is activated. If CRUISE/THROTTLE switch is OFF, pushing SET/CRUISE, RESUME/ACCEL has no effect on throttle speed of vehicle.

1. Push CRUISE/THROTTLE switch (Figure 1, Item 1) ON.
2. Bring vehicle to desired operating speed above 35 mph (56 kph).
3. Push SET/CRUISE on the SET/CRUISE, RESUME/ACCEL switch (Figure 1, Item 2) to set cruising speed.
4. Once speed is set, push SET/CRUISE on the SET/CRUISE, RESUME/ACCEL switch (Figure 1, Item 2) to decrease set speed or push RESUME/ACCEL on the SET/CRUISE, RESUME/ACCEL switch (Figure 1, Item 2) to increase set speed.

NOTE

Applying service brake temporarily deactivates the cruise control system but the previously set rpm remains in system memory until the CRUISE/THROTTLE switch is pushed OFF.

5. To return to the previously selected speed, push RESUME/ACCEL on the SET/CRUISE, RESUME/ACCEL switch (Figure 1, Item 2).
6. Push CRUISE/THROTTLE switch (Figure 1, Item 1) OFF to deactivate the system and clear system memory of previously selected speeds.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - HOOD OPERATION

INITIAL SETUP:

Personnel Required
Crewmember - (2)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine shutdown (WP 0013)
Side doors closed (WP 0005)
Wheels chocked (WP 0013)

OPERATING PROCEDURES

WARNING

Hood requires two-person lift. Keep arms and hands clear of hood when operating. Be aware of pinch point hazards and ensure fingers and hands are kept clear of these areas while opening and closing hood. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Use extreme care when working under hood and ensure it is properly supported. Failure to comply may result in serious injury or death to personnel.

CAUTION

Ensure medical equipment is removed from Rugged All-Purpose Cargo Carrier (RACC) and front of the vehicle prior to opening hood. Failure to comply may cause damage to equipment.

NOTE

Driver side shown; commander side similar.

Hood Open

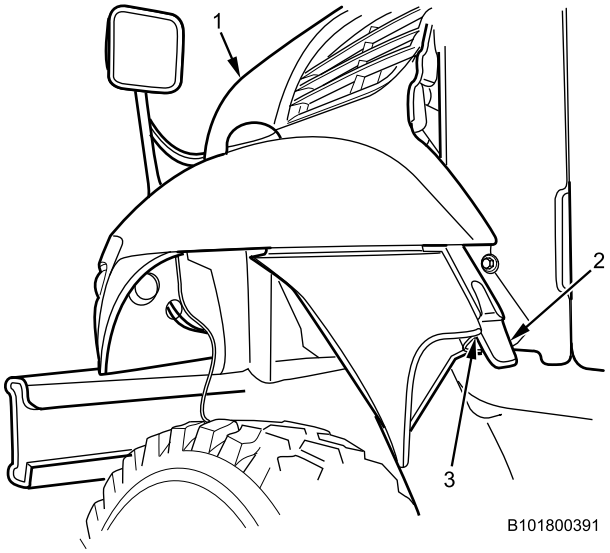


Figure 1. Engine Hood and Latch.

1. Lift up on hood latch (Figure 1, Item 2) to unlock hood (Figure 1, Item 1).
2. Release hood latch (Figure 1, Item 2) from bracket (Figure 1, Item 3).
3. Perform steps 1 and 2 on commander side of vehicle.

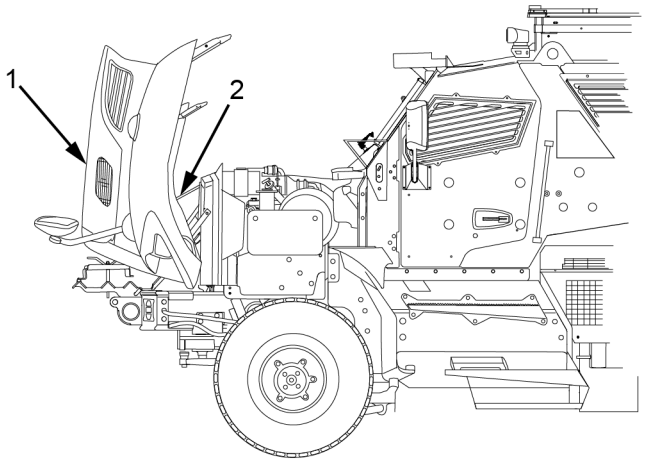


Figure 2. Safety Cables.

4. With assistant, lift hood (Figure 2, Item 1) forward until completely opened. Safety cables (Figure 2, Item 2) will hold hood in place.

END OF TASK

OPERATING PROCEDURES

Hood Close

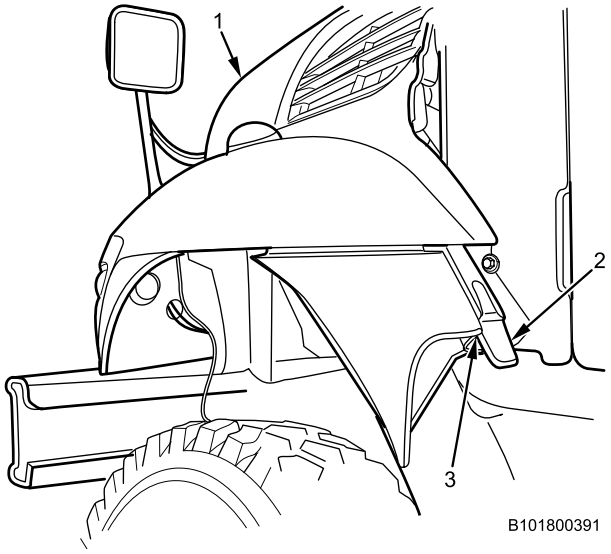


Figure 3. Engine Hood and Latch.

1. With assistant, lower hood (Figure 3, Item 1) until seated.
2. Position hood latch (Figure 3, Item 2) into bracket (Figure 3, Item 3).
3. Lock hood latch (Figure 3, Item 2) by pushing down.
4. Perform steps 2 and 3 on opposite side of vehicle.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - VEHICLE FUELING OPERATION

INITIAL SETUP:

Materials/Parts
Gloves, nitrile, large (WP 0110, Item 11)
Goggles, industrial (WP 0110, Item 13)
Pan, drain (WP 0110, Item 23)
Rag, wiping (WP 0110, Item 25)

Equipment Condition
Engine shutdown (WP 0013)
Driver side door closed (WP 0005)

OPERATING PROCEDURES

Fuel Tank Cap Open

WARNING

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with Standard Operating Procedures (SOP). Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel.

Do not fill fuel tank with engine running. Do not overfill fuel tank. Ensure to wear safety goggles and chemical-resistant gloves prior to beginning fueling operations. Clean fuel spills immediately in accordance with SOP. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

Be alert at all times for the smell of fuel. Hot engines and components can ignite fuel. If fuel smell is detected while operating vehicle, shut down vehicle immediately. Failure to comply may result in serious injury or death to personnel.

Do not operate fuel fired heater in an enclosed area without adequate ventilation. Switch OFF the fuel fired heater before refueling operations. Failure to comply can result in serious injury or death to personnel.

Hazards of Radiation (RADHAZ): Be aware of the radiation hazards of emitters on and near your vehicle. Each emitter will have specific standoff distances for personnel, ordinance, and fuel and includes any platform that utilizes similar radio frequency emitters, such as high frequency radios, jammers, and radars. Avoid contact with active antenna and maintain proper standoff distances from active antennas. Failure to comply may result in injury to personnel.

Antenna emits radio frequency radiation. Do not touch active antenna and maintain proper standoff distances from active antennas. Failure to comply may result in serious injury or death to personnel.

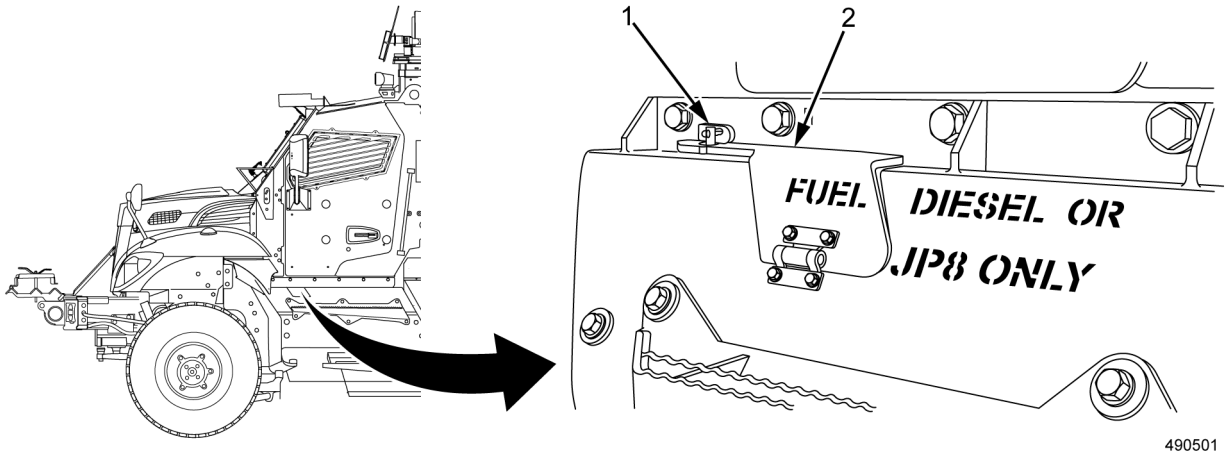


Figure 1. Exterior Fuel Tank Armor Access Door Open.

1. Slide holddown (Figure 1, Item 1) on exterior fuel tank armor access door (Figure 1, Item 2) to the right and upward.

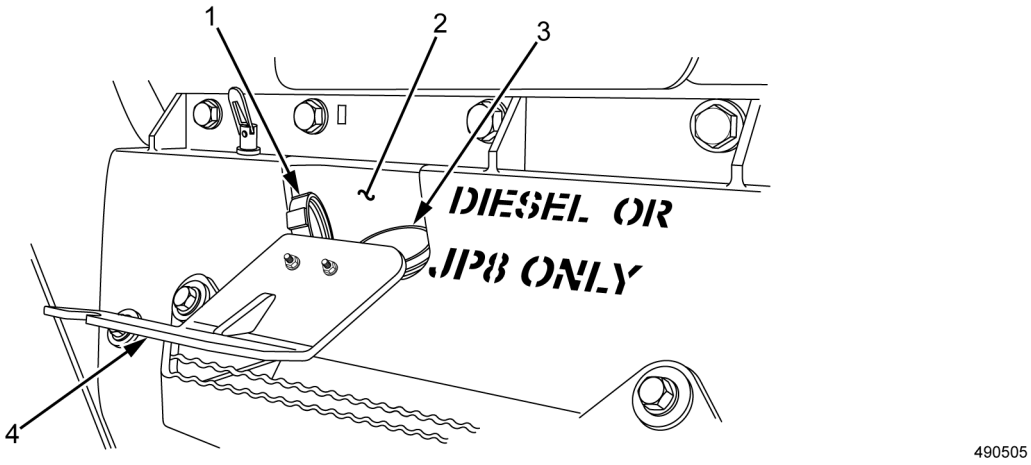


Figure 2. Fuel Tank Cap Removal.

2. Open exterior fuel tank armor access door (Figure 2, Item 4) to downward position.
3. Twist fuel tank cap (Figure 2, Item 1) counterclockwise until free and remove from fuel tank (Figure 2, Item 2).
4. Insert fuel hose nozzle or fuel can in filler neck (Figure 2, Item 3).

NOTE

Fuel tank capacity 57 gal (216L).

5. Fill vehicle with fuel.
6. Remove fuel hose nozzle or fuel can from filler neck (Figure 2, Item 3).

END OF TASK

OPERATING PROCEDURES

Fuel Tank Cap Close

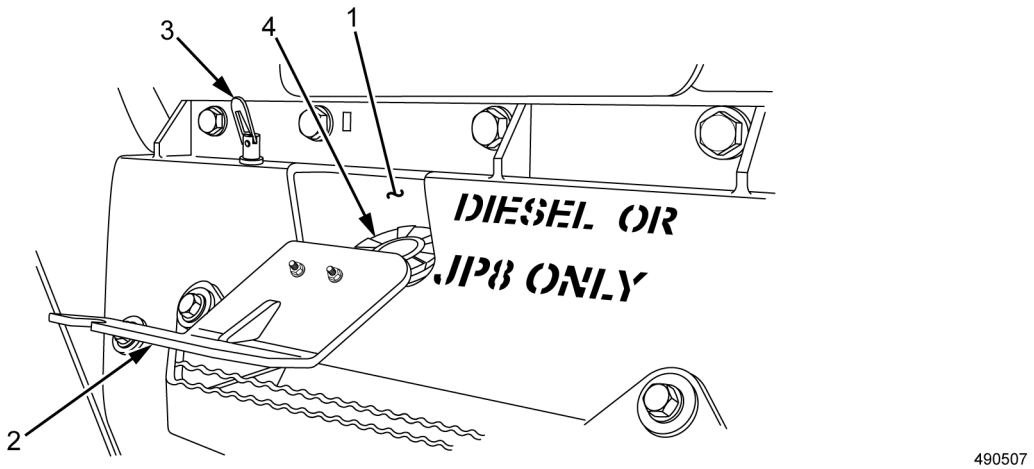


Figure 3. Fuel Tank Cap Installation.

1. Install fuel tank cap (Figure 3, Item 4) on fuel tank (Figure 3, Item 1) and twist clockwise until secured.
2. Verify that holddown (Figure 3, Item 3) is in upward position.
3. Lift exterior fuel tank armor access door (Figure 3, Item 2) upward to close.

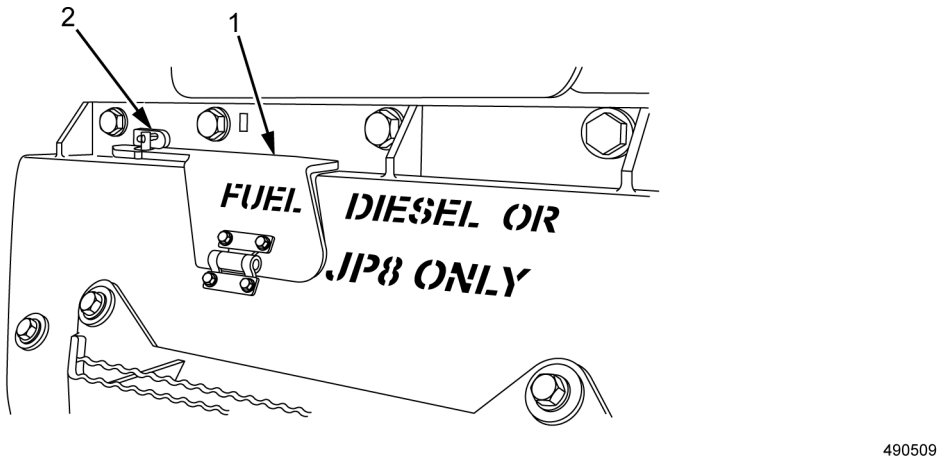


Figure 4. Exterior Fuel Tank Armor Access Door Close.

4. Lower holddown downward (Figure 4, Item 2) on exterior fuel tank armor access door (Figure 4, Item 1).
5. Secure exterior fuel tank armor access door (Figure 4, Item 1) by sliding holddown (Figure 4, Item 2) to the left.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - CENTRAL TIRE INFLATION SYSTEM (CTIS) OPERATION

INITIAL SETUP:

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

OPERATING PROCEDURES

WARNING

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the Central Tire Inflation System (CTIS) Driver Display Module (DDM) can help identify a tire problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment.

Do not drive vehicle farther than 30 mi (48 km) or exceed speeds of 30 mph (48 kph) while operating on the run-flat inserts. Vehicle control is greatly reduced. Reduce vehicle speed and loading, especially when traveling on secondary roads, cross-country, or in high traffic areas. Failure to comply may cause a tire fire or loss of vehicle control, which may result in serious injury or death to personnel and/or damage to equipment.

NOTE

CTIS allows tire pressure increase due to heat buildup during vehicle use. It will not automatically deflate these pressure buildups.

CTIS allows the driver to control tire pressure on all tires. The system allows the driver to select one of four terrain modes and three load modes. CTIS has the ability to detect maximum vehicle speed allowed for each mode. If the vehicle exceeds the maximum speed for the selected tire pressure, the OVERSPEED indicator on the DDM will warn the driver. If the average speed is exceeded for more than 1 minute, the system will automatically adjust the tire pressure.

CTIS LOAD Switch

NOTE

Vehicle load setting is represented by horizontal bar graph on CTIS DDM. Toggle LOAD switch up for increased load and down for decreased load.

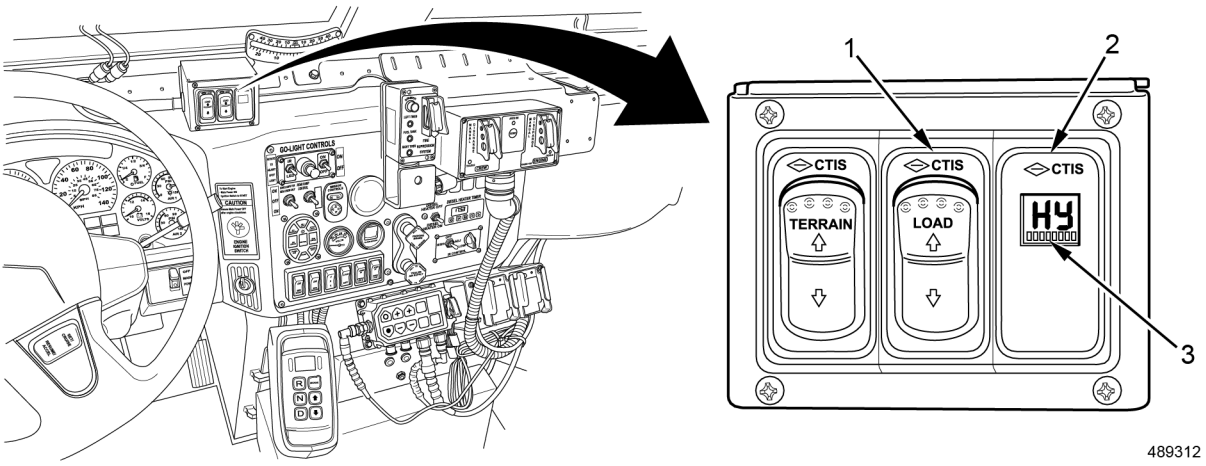


Figure 1. Empty Load Displayed.

1. For empty load, toggle LOAD switch (Figure 1, Item 1) until no bar (Figure 1, Item 3) appears on DDM (Figure 1, Item 2).

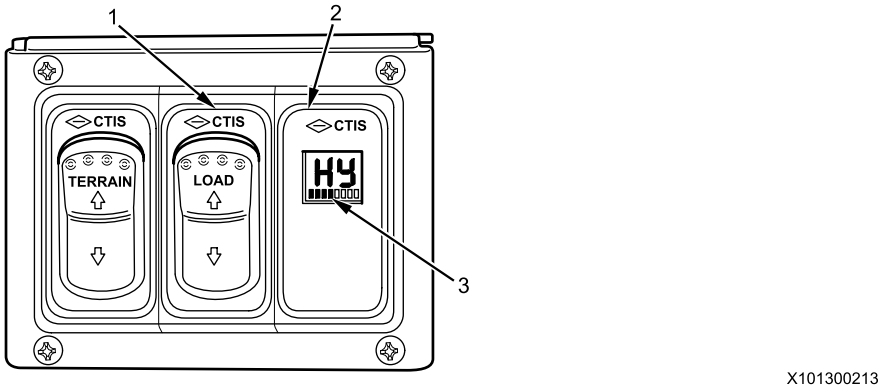
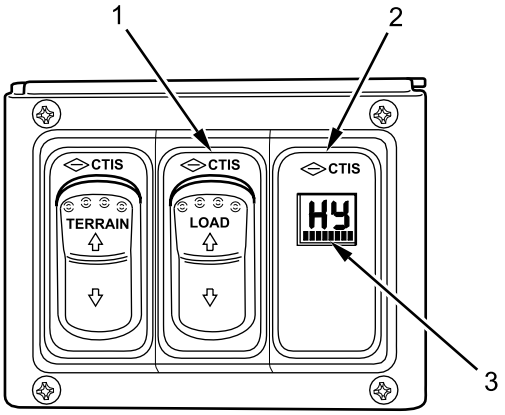


Figure 2. Partial Load Displayed.

2. For partial load, toggle LOAD switch (Figure 2, Item 1) until half bar (Figure 2, Item 3) appears on DDM (Figure 2, Item 2).



X101300214

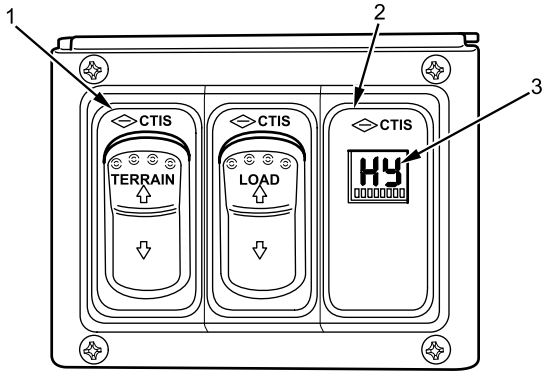
Figure 3. Full Load Displayed.

3. For full load, toggle LOAD switch (Figure 3, Item 1) until full bar (Figure 3, Item 3) appears on DDM (Figure 3, Item 2).

END OF TASK

OPERATING PROCEDURES

CTIS TERRAIN Switch



X101300215

Figure 4. HY Displayed.

NOTE

Terrain selection is changed by toggling TERRAIN switch up to increase tire pressures and down to decrease tire pressures. Terrain selection will display on CTIS DDM. Any switch operation that does not change tire pressures will command CTIS to do a pressure check. Tire pressures for the following terrains can be programmed and may be selected by operator.

1. For travel on paved surfaces at higher speeds, toggle TERRAIN switch (Figure 4, Item 1) until Highway (HY) (Figure 4, Item 3) appears on DDM (Figure 4, Item 2).

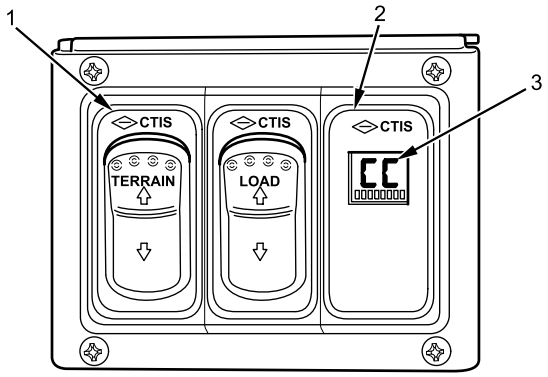


Figure 5. CC Displayed.

2. For reduced-speed operation on secondary roads, toggle TERRAIN switch (Figure 5, Item 1) until Cross-Country (CC) (Figure 5, Item 3) appears on DDM (Figure 5, Item 2).

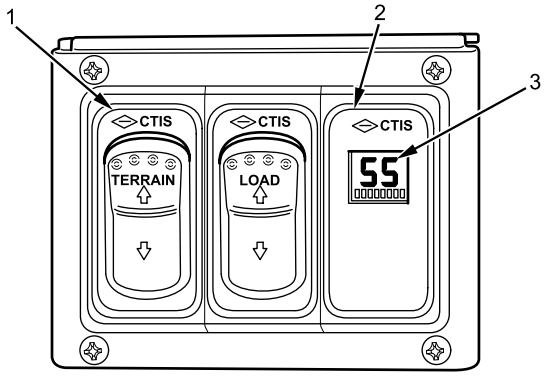


Figure 6. SS Displayed.

3. For reduced-speed operation on unpaved surfaces, toggle TERRAIN switch (Figure 6, Item 1) until Mud/Sand/Snow (SS) (Figure 6, Item 3) appears on DDM (Figure 6, Item 2).

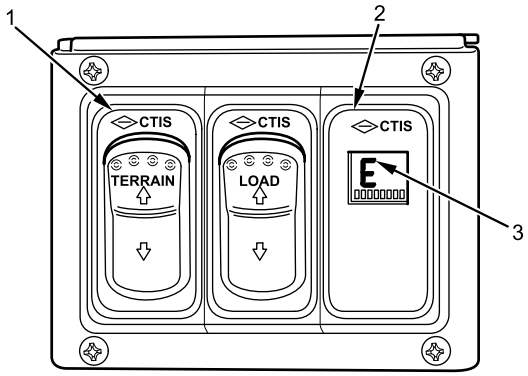


Figure 7. E Displayed.

CAUTION

The Emergency (E) selection is for extreme conditions only and should not be used for normal driving. Failure to comply may result in damage to equipment.

4. For selection of extremely low tire pressures to help free stuck vehicle, toggle TERRAIN switch (Figure 7, Item 1) until E (Figure 7, Item 3) appears on DDM (Figure 7, Item 2).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - RUGGED ALL-PURPOSE CARGO CARRIER (RACC) OPERATION

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)

OPERATING PROCEDURES

Side Rugged All-Purpose Cargo Carrier (RACC) Unstow

NOTE

There are two driver side and two commander side Rugged All-Purpose Cargo Carriers (RACC) on vehicle.

One shown; other three similar.

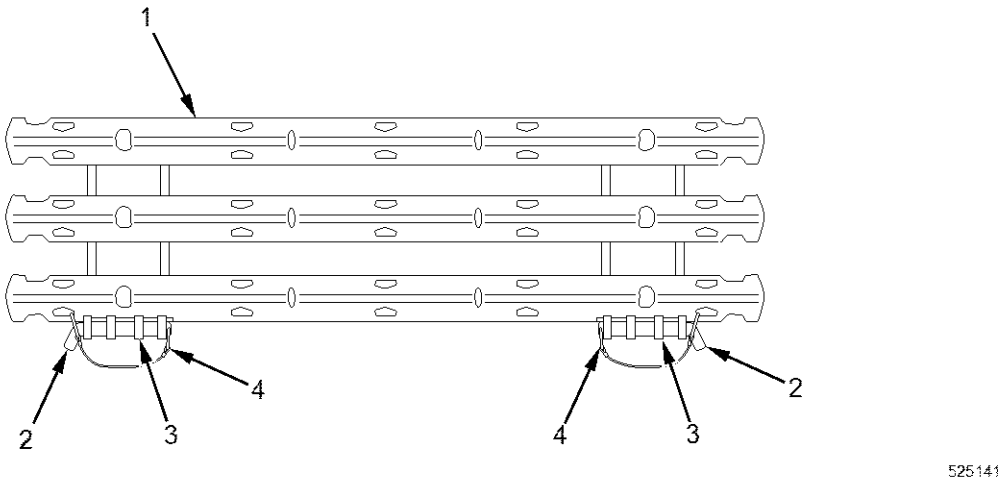


Figure 1. Side RACC Support Bracket Unstow.

1. Remove two retaining pins (Figure 1, Item 4) from two hinge pins (Figure 1, Item 2).
2. Remove two hinge pins (Figure 1, Item 2) from side RACC support bracket (Figure 1, Item 3).
3. Pull side RACC (Figure 1, Item 1) down.
4. Install two hinge pins (Figure 1, Item 2) to side RACC support bracket (Figure 1, Item 3).
5. Install two retaining pins (Figure 1, Item 4) to hinge pins (Figure 1, Item 2).

END OF TASK

OPERATING PROCEDURES

Side RACC Stow

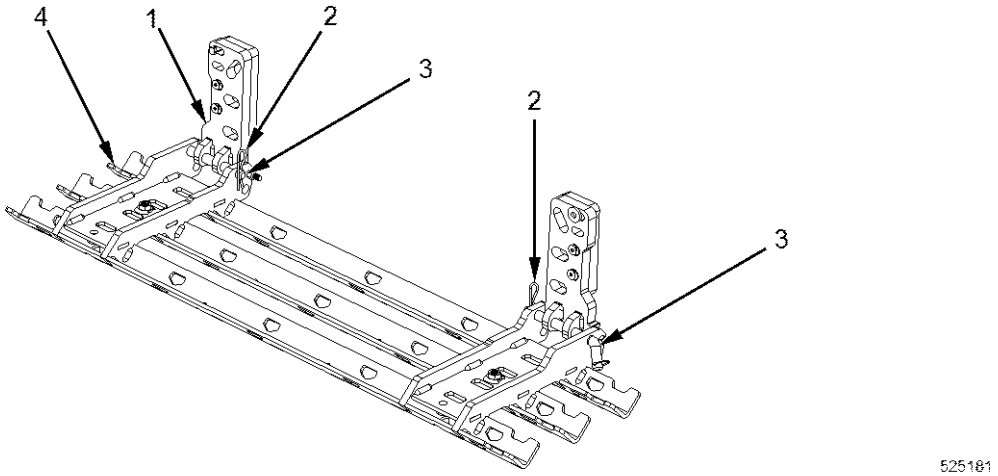


Figure 2. Side RACC Support Bracket Stow.

1. Remove two retaining pins (Figure 2, Item 2) from two hinge pins (Figure 2, Item 3).
2. Remove two hinge pins (Figure 2, Item 3) from side RACC support bracket (Figure 2, Item 1).
3. Push side RACC (Figure 2, Item 4) up.
4. Install two hinge pins (Figure 2, Item 3) to side RACC support bracket (Figure 2, Item 1).
5. Install two retaining pins (Figure 2, Item 2) to hinge pins (Figure 2, Item 3).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - RED CROSS FOLDING SIGN OPERATION

INITIAL SETUP:

References
WP 0027
WP 0062

Parking brake set (WP 0013)
Rear door/ramp lowered (WP 0018)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)

OPERATING PROCEDURES

WARNING

To prevent falls from the sides, rear, or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

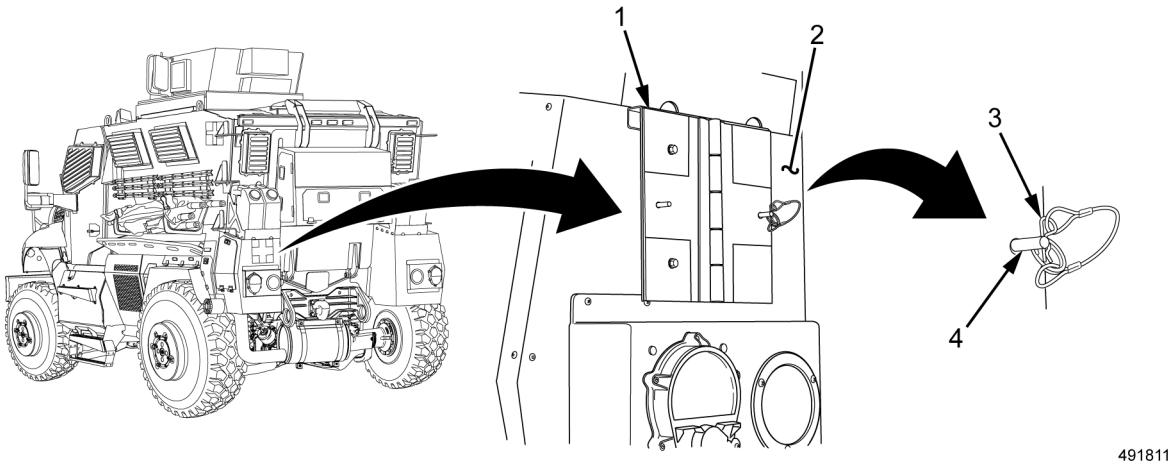


Figure 1. Exterior Vehicle Rear Red Cross Folding Sign Open.

1. Remove cotter pin (Figure 1, Item 3) from peg (Figure 1, Item 4).
2. Open red cross folding sign (Figure 1, Item 1) on exterior vehicle rear (Figure 1, Item 2).
3. Insert cotter pin (Figure 1, Item 3) in peg (Figure 1, Item 4).

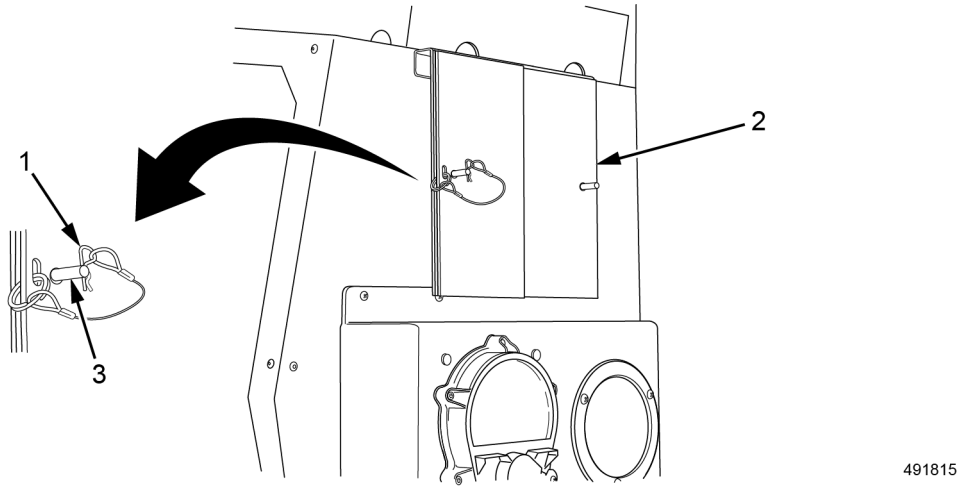


Figure 2. Exterior Vehicle Rear Red Cross Folding Sign Close.

4. Remove cotter pin (Figure 2, Item 1) from peg (Figure 2, Item 3).
5. Close red cross folding sign (Figure 2, Item 2).
6. Insert cotter pin (Figure 2, Item 1) in peg (Figure 2, Item 3).

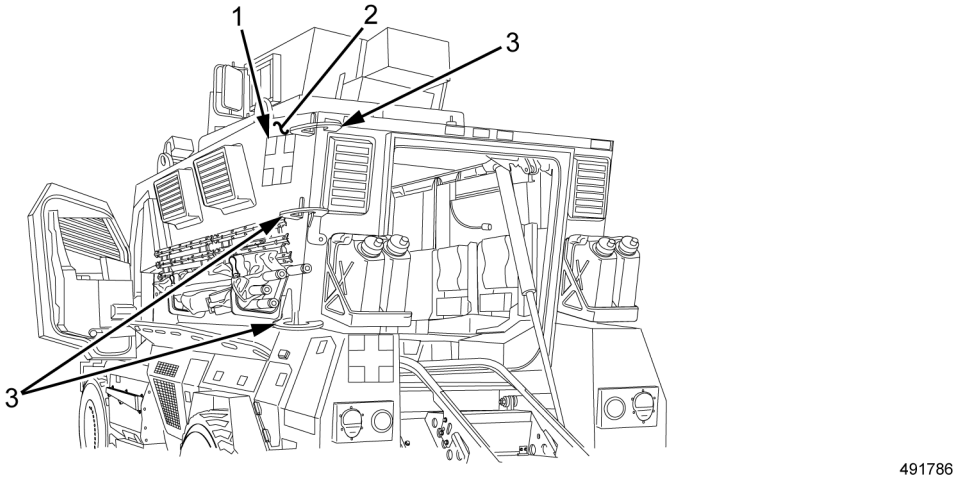


Figure 3. Exterior Driver Side Rear Red Cross Folding Sign.

7. Utilizing rear door/ramp, use exterior vehicle steps (Figure 3, Item 3) to access red cross folding sign (Figure 3, Item 1) on exterior driver side rear (Figure 3, Item 2).
8. Repeat steps 1 through 3 to open red cross folding sign (Figure 3, Item 1).
9. Repeat steps 4 through 6 to close red cross folding sign (Figure 3, Item 1).

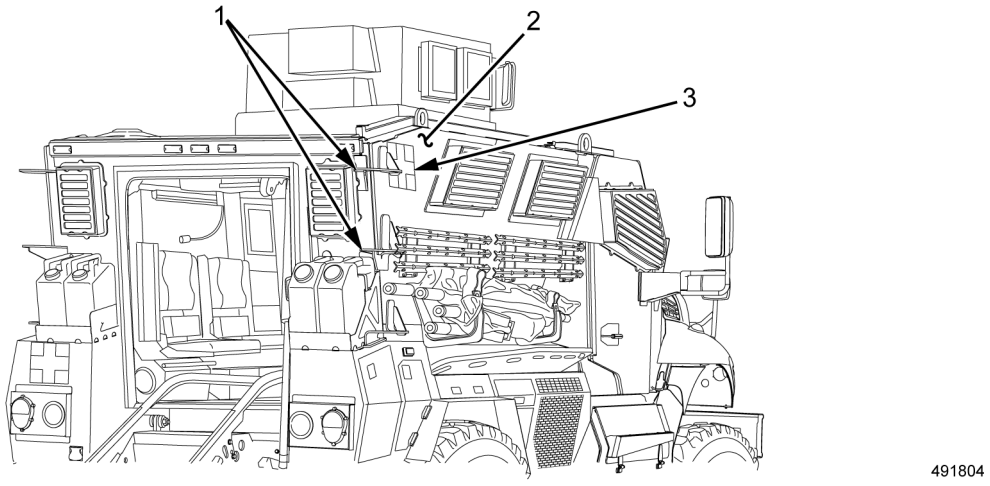


Figure 4. Exterior Commander Side Rear Red Cross Folding Sign.

10. Utilizing rear door/ramp, use exterior vehicle steps (Figure 4, Item 1) to access red cross folding sign (Figure 4, Item 3) on exterior commander side rear (Figure 4, Item 2).
11. Repeat steps 1 through 3 to open red cross folding sign (Figure 4, Item 3).
12. Repeat steps 4 through 6 to close red cross folding sign (Figure 4, Item 3).

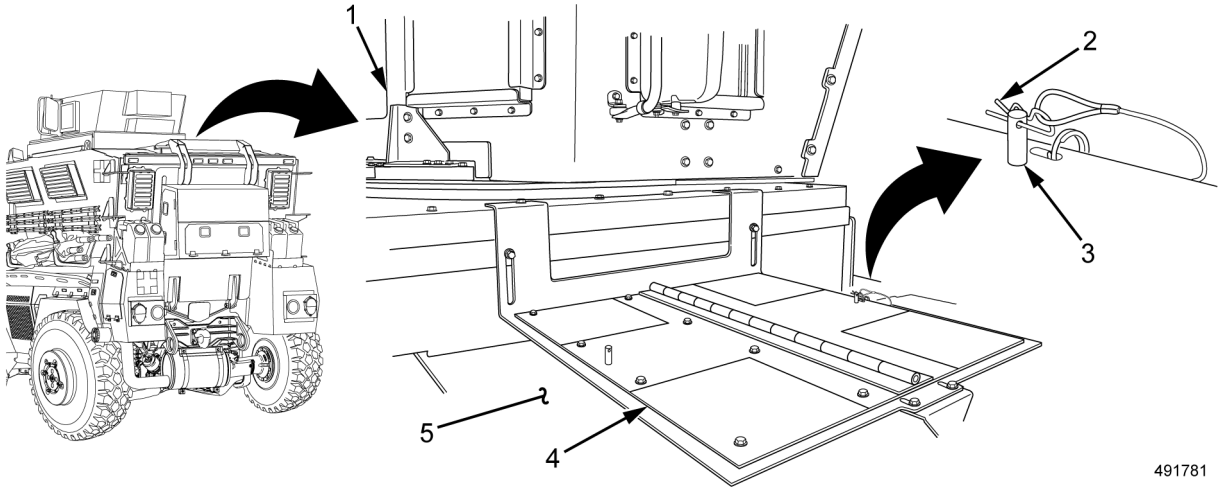


Figure 5. Exterior Vehicle Roof Red Cross Folding Sign.

13. Verify turret (Figure 5, Item 1) is rotated to the side to access red cross folding sign (Figure 5, Item 4) on exterior vehicle roof (Figure 5, Item 5), Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.
14. Open emergency hatch (roof) to access red cross folding sign (Figure 5, Item 4) on exterior vehicle roof (Figure 5, Item 5). Refer to WP 0062, Emergency Operation - Emergency Hatch (Roof).
15. Remove cotter pin (Figure 5, Item 2) from peg (Figure 5, Item 3).
16. Open red cross folding sign (Figure 5, Item 4) on exterior vehicle roof (Figure 5, Item 5).
17. Insert cotter pin (Figure 5, Item 2) in peg (Figure 5, Item 3).
18. Repeat steps 4 through 6 to close red cross folding sign (Figure 5, Item 4).

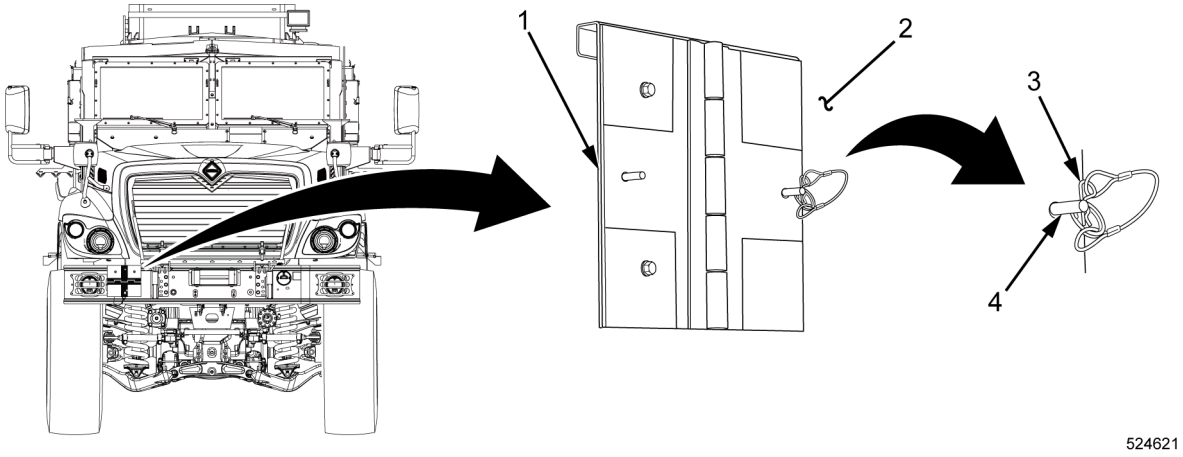


Figure 6. Exterior Vehicle Front Red Cross Folding Sign Open.

19. Remove cotter pin (Figure 6, Item 3) from peg (Figure 6, Item 4).
20. Open exterior front red cross folding sign (Figure 6, Item 1) on exterior vehicle front red cross folding sign (Figure 6, Item 2).
21. Insert cotter pin (Figure 6, Item 3) in peg (Figure 6, Item 4).

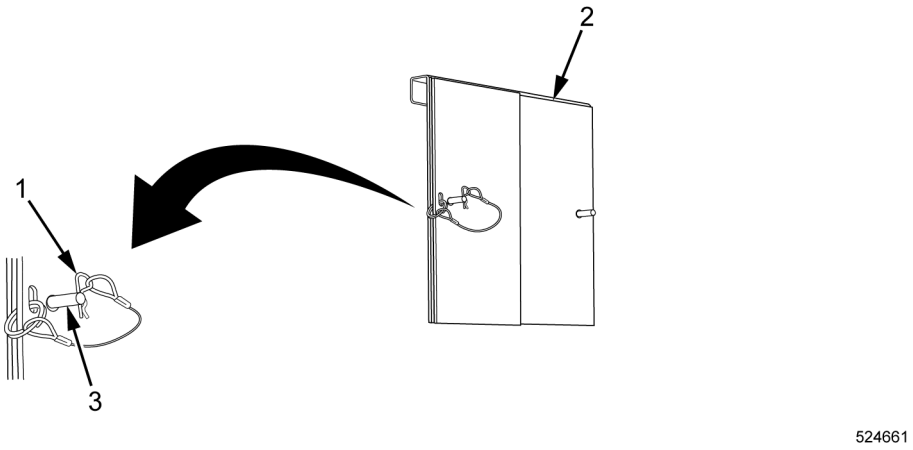


Figure 7. Exterior Vehicle Front Red Cross Folding Sign Close.

22. Repeat steps 4 through 6 to close exterior front red cross folding sign (Figure 7, Item 2).

FOLLOW-ON MAINTENANCE

Raise rear door/ramp (WP 0018).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - BLACKOUT (B.O.) OPERATION

INITIAL SETUP:

Equipment Condition
- Transmission set in NEUTRAL (N) (WP 0013)
- Parking brake set (WP 0013)
- Sliding hatch closed (WP 0023)
- Stowed items secured (WP 0074)
- Rear passenger lights set to B.O. position (WP 0030)

OPERATING PROCEDURES

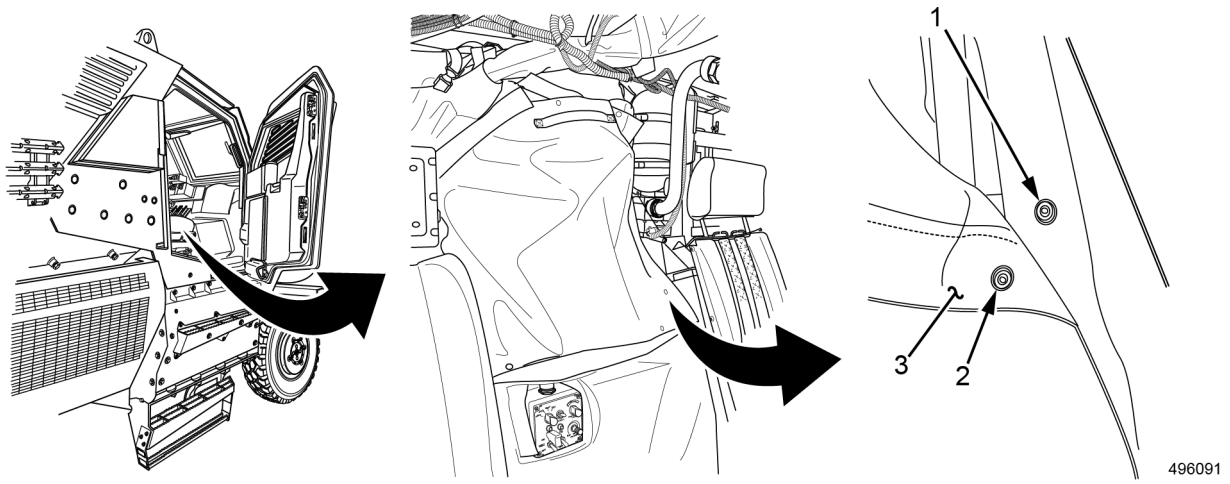


Figure 1. B.O. Cover.

1. Snap 12 female snaps (Figure 1, Item 2) to 12 male snaps (Figure 1, Item 1) to secure B.O. cover (Figure 1, Item 3).

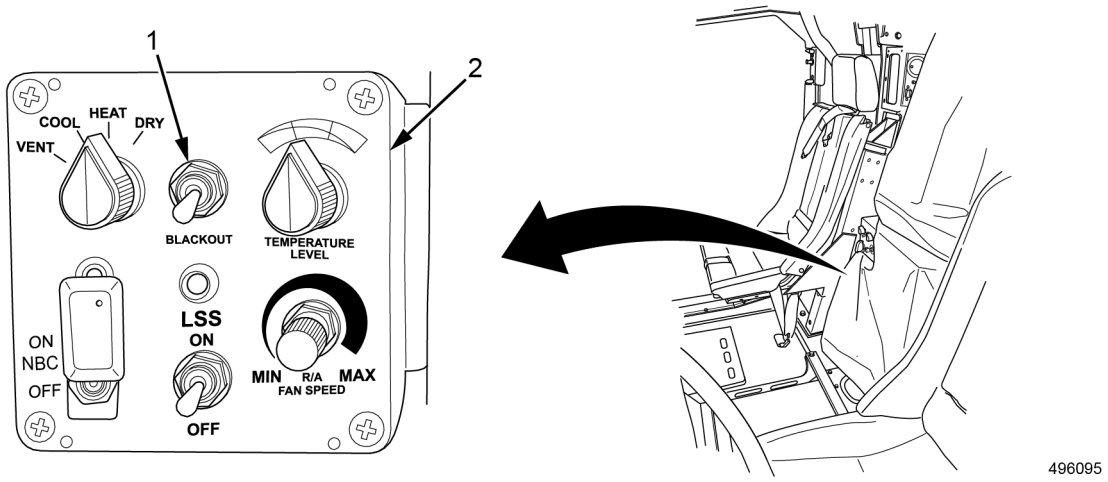


Figure 2. LSS Control Panel.

2. Push down switch (Figure 2, Item 1) to BLACKOUT position on Life Support System (LSS)/Heating, Ventilation, and Air Conditioning (HVAC) control panel (Figure 2, Item 2).

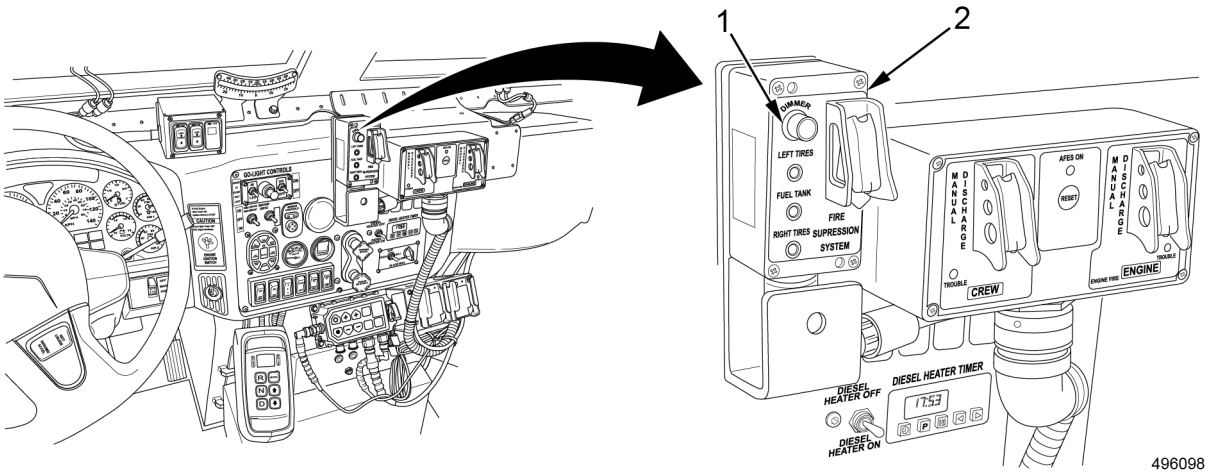


Figure 3. FSS Control Panel.

3. Rotate DIMMER switch (Figure 3, Item 1) counterclockwise on Fire Suppression System (FSS) control panel (Figure 3, Item 2).

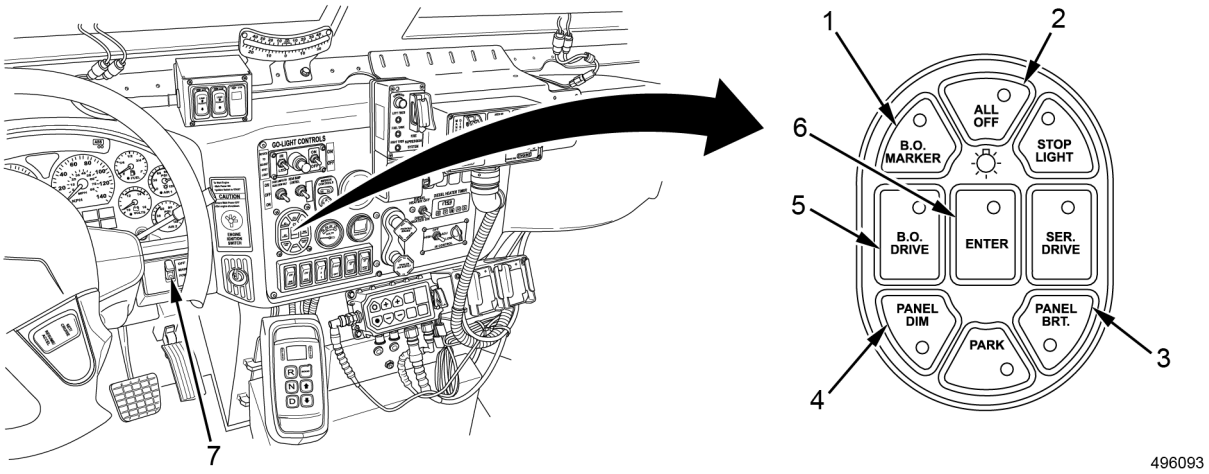


Figure 4. MVLS.

NOTE

After ignition switch is set to ACC, RUN, or when vehicle is started, the keypad backlight on Master Vehicle Light Switch (MVLS) will illuminate and turn off after 20 seconds. If keypad backlight is not illuminated, pressing any button once will allow MVLS programming functions.

The default selection on the MVLS is ALL OFF.

4. Turn MAIN POWER switch (Figure 4, Item 7) ON.
5. Press B.O. MARKER (Figure 4, Item 1) and ENTER (Figure 4, Item 6) for B.O. MARKER operation.
6. Press B.O. DRIVE (Figure 4, Item 5) and ENTER (Figure 4, Item 6) for B.O. DRIVE operation.
7. After selecting either B.O. MARKER (Figure 4, Item 1) or B.O. DRIVE (Figure 4, Item 5), panel can be illuminated using PANEL DIM (Figure 4, Item 4) or PANEL BRT. (Figure 4, Item 3) buttons.

8. When in any MVLS light setting mode, pressing ALL OFF (Figure 4, Item 2) and then ENTER (Figure 4, Item 6) will deactivate all lights.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - LITTER LIFTING AND SECURING OPERATION

INITIAL SETUP:

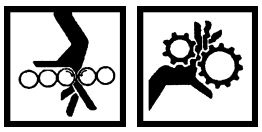
Personnel Required
Crewmember - (2)

Equipment Condition
Rear door/ramp open (WP 0018)
Passenger seat belts securely stowed (WP 0009)
Passenger seats in litter platform position (WP 0007)
Litter loaded (WP 0040)

OPERATING PROCEDURES

Litter Lifting And Securing

WARNING



Litter lift is not equipped with automatic stop for pay in or pay out and must be stopped manually. Failure to comply may result in injury to personnel or equipment failure.

Keep hands clear of litter lift rail during operation. Failure to comply may result in injury to personnel.

Maximum lifting capacity of litter lift is 500 lb (227 kg). Exceeding weight limit may result in injury to personnel or equipment failure.

Ensure litter handles are clear of fixed metal brackets in vehicle during litter lifting. Failure to comply may result in injury to personnel and damage to litter assembly.

Use extreme caution when raising and lowering litter as multiple pinch points exist between litter, litter trolleys, and litter trolley rails. Failure to comply may result in injury to personnel or equipment damage.

Keep personnel clear of litter-lift moving parts. Ensure litters and patients are properly secured and clear of rear door/ramp and all other obstacles during litter-lift movement. Failure to comply may result in serious injury or death to personnel.

CAUTION

Apply tension to carabiner when not attached to litter to ensure proper functioning. Failure to comply may result in damage to equipment.

When raising rope, distribute rope evenly from side to side to prevent binding. Failure to comply may result in damage to equipment.

Litter trolleys must be stowed in home position before raising rear door/ramp. Failure to comply may result in damage to equipment.

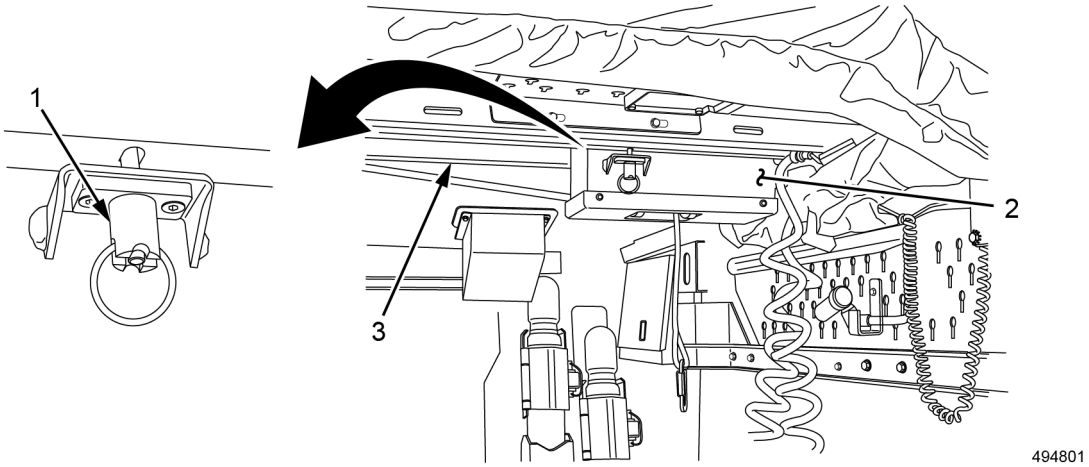


Figure 1. Litter Lift Lock Pin.

1. Pull lock pin (Figure 1, Item 1) down and rotate counterclockwise to disengage lock pin from litter lift rail (Figure 1, Item 3).
2. Roll litter lift (Figure 1, Item 2) above litter.
3. Rotate lock pin (Figure 1, Item 1) clockwise and release to engage lock pin in center position on litter rail (Figure 1, Item 3).

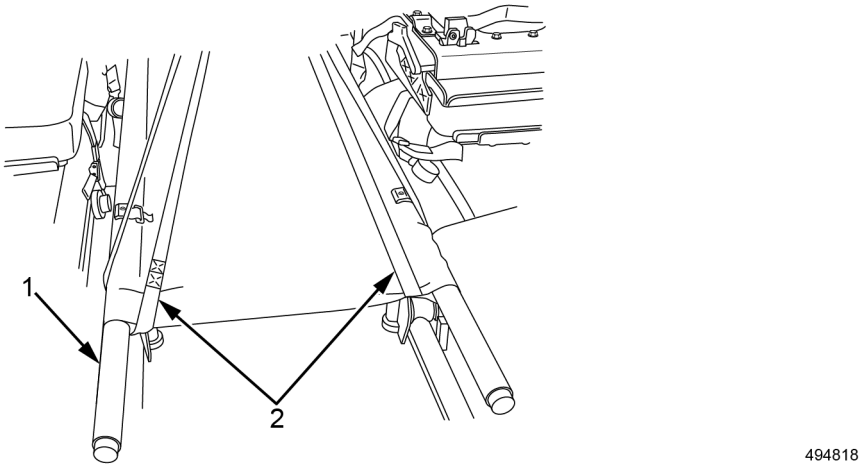


Figure 2. Attaching Lift Straps.

NOTE

Two litter lift straps shown; other two similar.

4. Attach four litter lift straps (Figure 2, Item 2) on four handles on litter (Figure 2, Item 1).

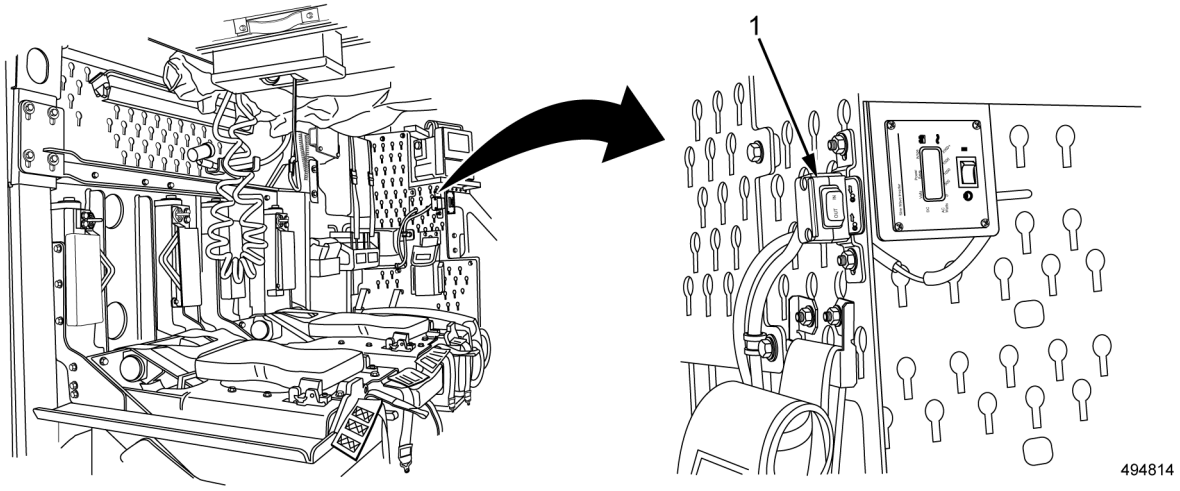


Figure 3. Litter Lift Switch.

5. Use litter lift switch (Figure 3, Item 1) to pay out rope (Figure 4, Item 4) as necessary to attach litter lift straps.

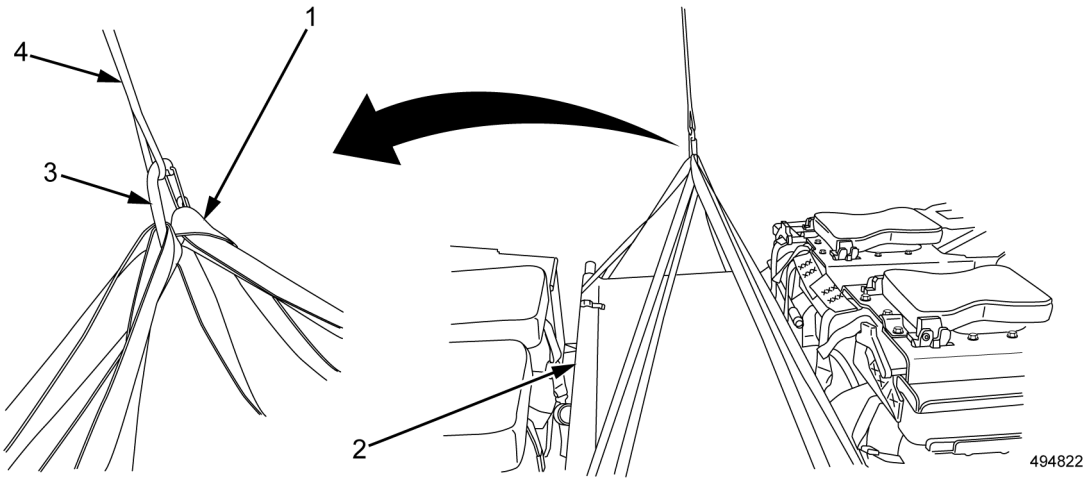


Figure 4. Litter Lift Hookup.

6. Attach litter lift straps (Figure 4, Item 1) to litter lift carabiner hook (Figure 4, Item 3).

WARNING

Ensure litter handles are clear of fixed metal brackets in vehicle during litter lifting. Failure to comply may result in injury to personnel and damage to litter assembly.

7. Use litter lift switch (Figure 3, Item 1) to raise litter (Figure 4, Item 2).

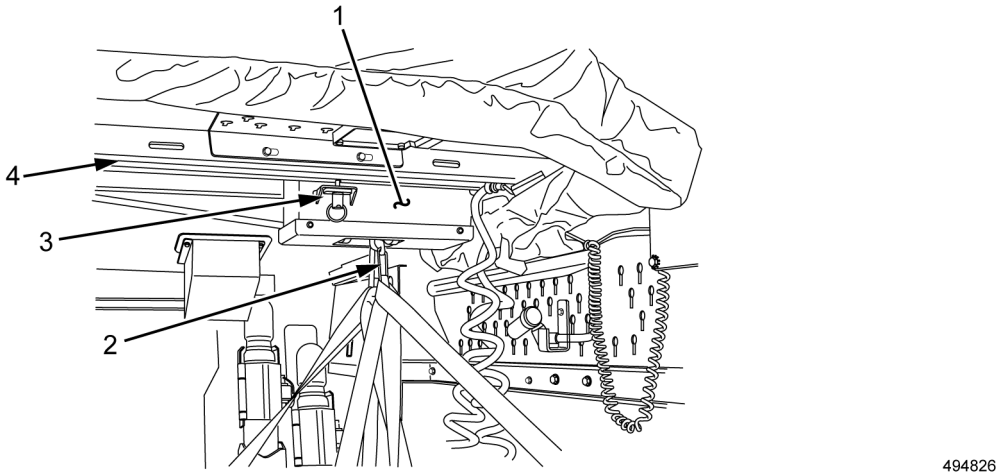


Figure 5. Litter Lift.

8. Pull lock pin (Figure 5, Item 3) down and rotate counterclockwise to disengage lock pin from litter lift rail (Figure 5, Item 4).
9. Move litter lift (Figure 5, Item 1) along litter lift rail (Figure 5, Item 4) until litter is over litter platform (Figure 6, Item 1).
10. Release lock pin (Figure 5, Item 4) from lock position by rotating clockwise.
11. Engage lock pin (Figure 5, Item 3) in home position of litter lift rail (Figure 5, Item 4).

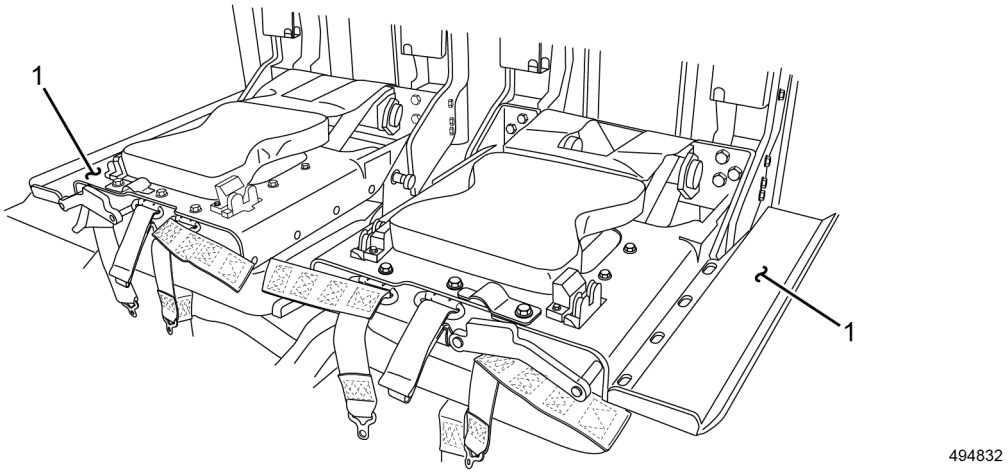


Figure 6. Litter Platform.

12. Use litter lift switch to pay out rope (Figure 5, Item 2) to lower litter onto litter platform (Figure 6, Item 1).

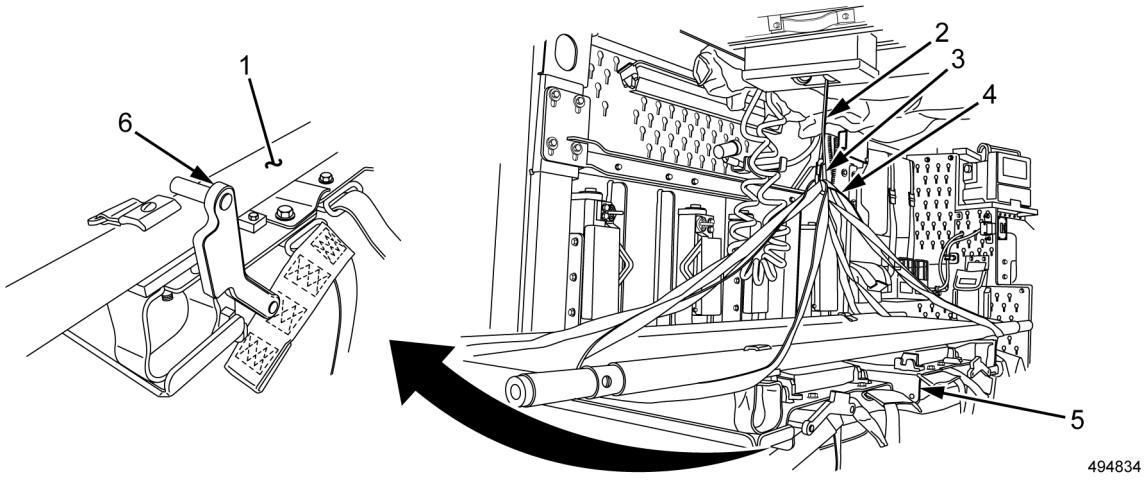


Figure 7. Litter Locking Bar and Buckling.

NOTE

One litter locking bar shown; others similar.

13. Pull spring-loaded litter locking bar (Figure 7, Item 6) out of seat back (Figure 7, Item 5). Rotate litter locking bar (Figure 7, Item 6) up and over litter side (Figure 7, Item 1).
14. Use litter lift switch to pay out rope (Figure 7, Item 2) and remove four litter lift straps (Figure 7, Item 4) from carabiner hook (Figure 7, Item 3). Set aside lift straps for litter removal.
15. Use litter lift switch to pay in rope (Figure 7, Item 2).

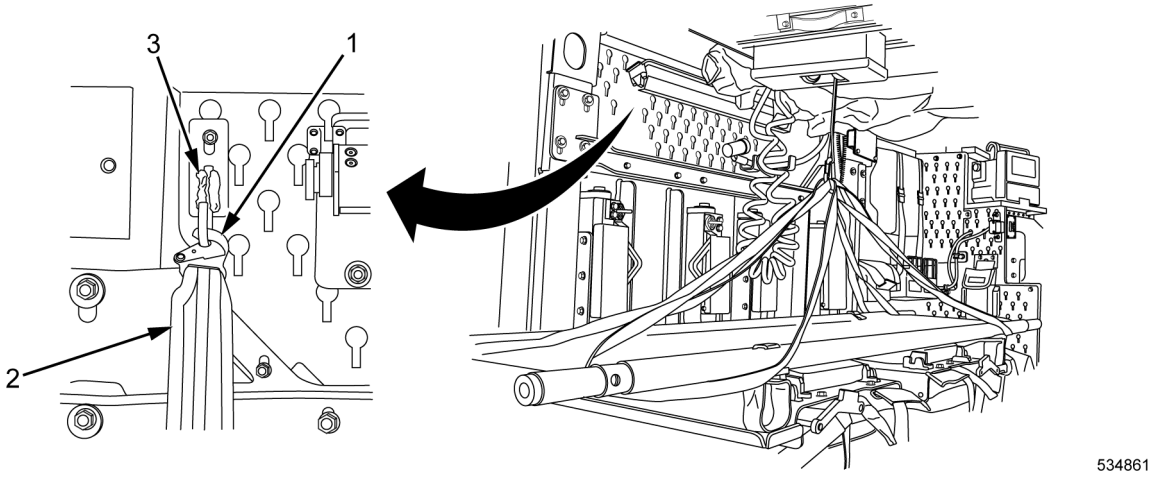


Figure 8. Litter Buckling Strap and Wall Mount.

NOTE

One buckle latch and litter buckling strap shown; others similar.

16. Remove buckle latch (Figure 8, Item 1) of litter buckling strap (Figure 8, Item 2) from wall mount (Figure 8, Item 3).

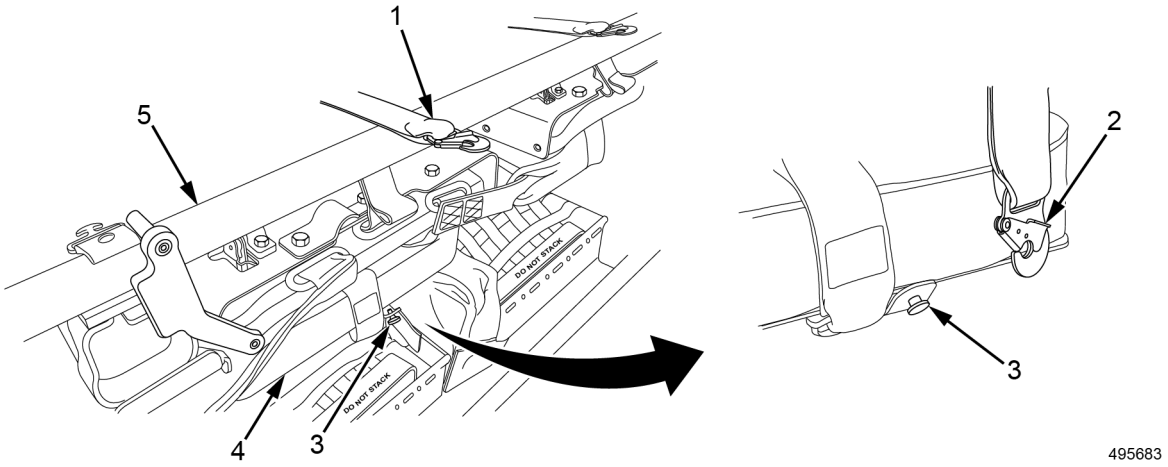


Figure 9. Buckling Litter to Platform.

17. Pull litter buckling strap (Figure 9, Item 1) over litter side (Figure 9, Item 5).
18. Secure buckle latch (Figure 9, Item 2) on buckle tab (Figure 9, Item 3) on seat back (Figure 9, Item 4), and tighten down litter buckling strap (Figure 9, Item 1).

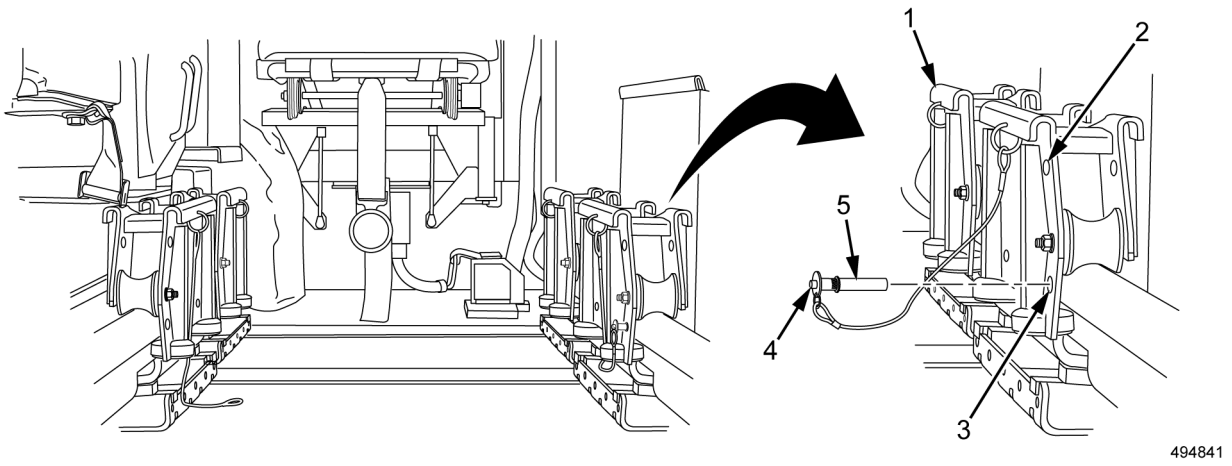


Figure 10. Litter Trolley Home Position.

19. Move four litter trolleys (Figure 10, Item 1) forward to home position.
20. While pushing in lock release button (Figure 10, Item 4), remove retaining pin (Figure 10, Item 5) from upper hole (Figure 10, Item 2) in litter trolley (Figure 10, Item 1).
21. While continuing to push in lock release button (Figure 10, Item 4) on retaining pin (Figure 10, Item 5), install retaining pin in lower hole (Figure 10, Item 3) of litter trolley (Figure 10, Item 1) to secure litter trolley in home position.
22. Repeat steps 20 and 21 on remaining three litter trolleys (Figure 10, Item 1).

END OF TASK

OPERATING PROCEDURES

Litter Lifting And Removal

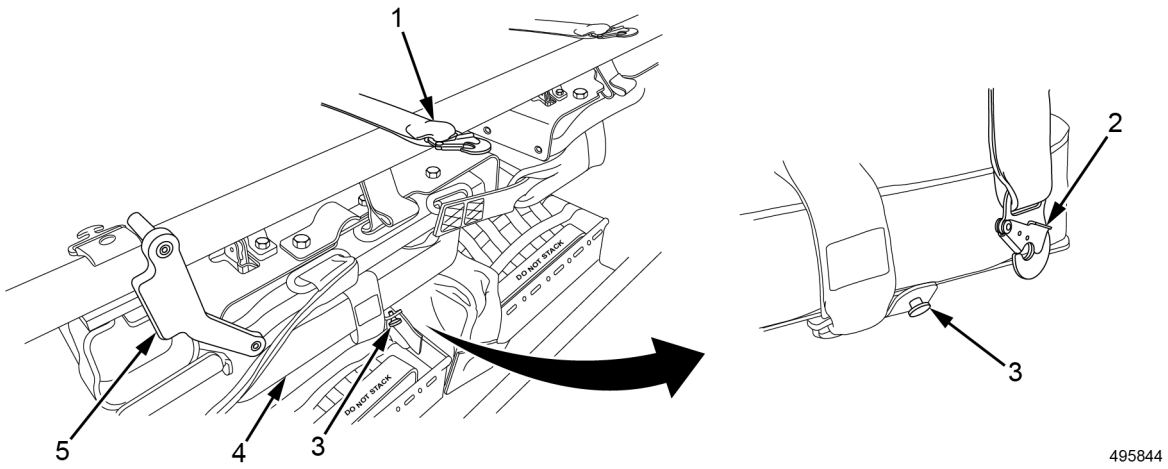


Figure 11. Litter Belt and Locking Bar.

NOTE

One litter locking bar and litter buckling strap shown; others similar.

1. Pull litter locking bar (Figure 11, Item 5) out and stow in seat back (Figure 11, Item 4) stowage.
2. Loosen litter buckling strap (Figure 11, Item 1) and unbuckle buckle latch (Figure 11, Item 2) from buckle tab (Figure 11, Item 3) on seat back (Figure 11, Item 4).

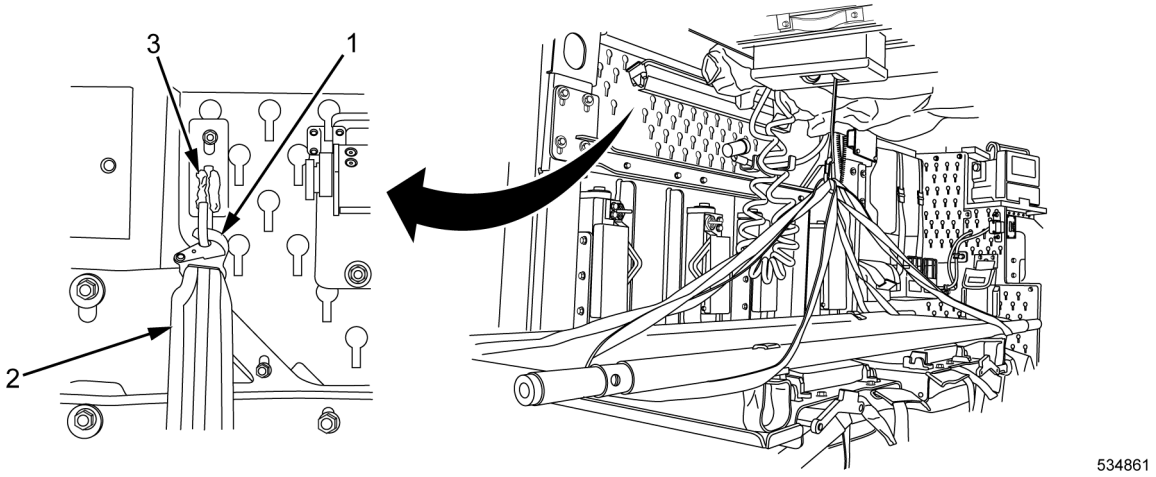


Figure 12. Littler Buckling Strap and Wall Mount.

3. Secure buckle latch (Figure 12, Item 1) of litter buckling strap (Figure 12, Item 2) to wall mount (Figure 12, Item 3), and tighten litter buckling strap.

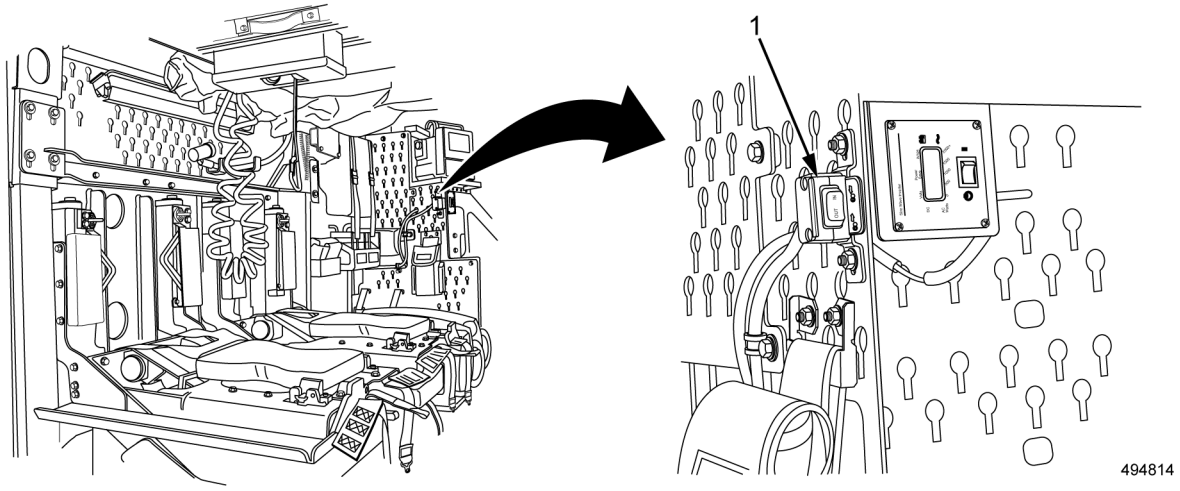


Figure 13. Litter Lift Switch.

4. Using litter lift switch (Figure 13, Item 1), pay out rope (Figure 14, Item 1) as necessary to attach litter lift straps (Figure 14, Item 3) on litter (Figure 14, Item 4).

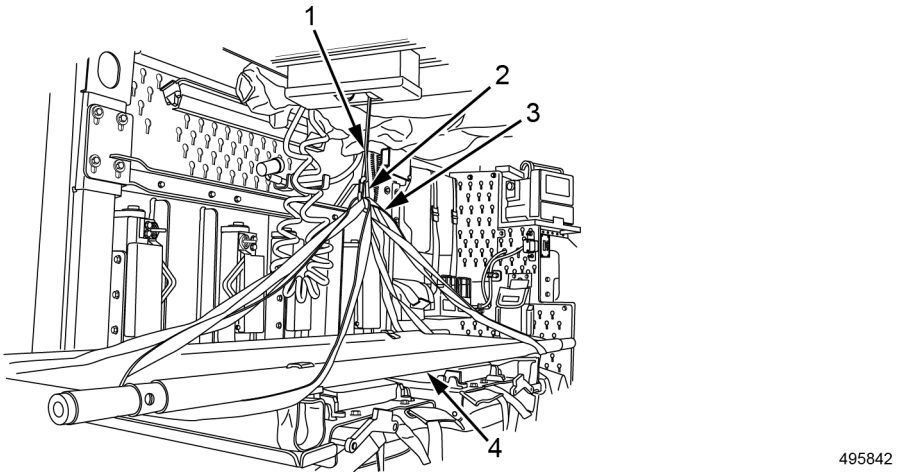


Figure 14. Attaching Litter Lift Straps.

5. Attach four litter lift straps (Figure 14, Item 3) on litter lift carabiner hook (Figure 14, Item 2).

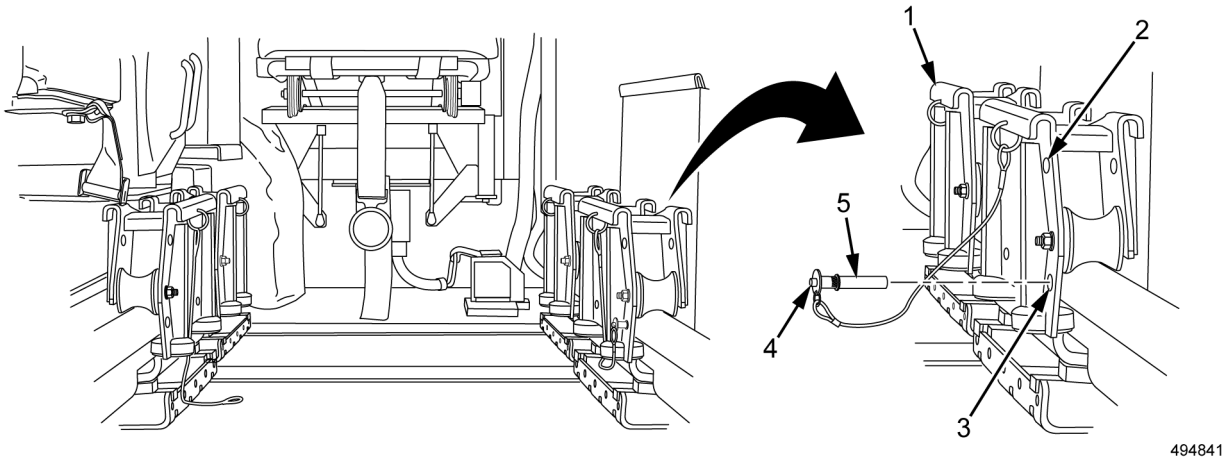


Figure 15. Litter Trolley Home Position.

WARNING

Use extreme caution when raising and lowering litter as multiple pinch points exist between litter, litter trolleys, and litter trolley rails. Failure to comply may result in injury to personnel or equipment damage.

6. While pushing in lock release button (Figure 15, Item 4), remove retaining pin (Figure 15, Item 5) from lower hole (Figure 15, Item 3) on litter trolley (Figure 15, Item 1).
7. While continuing to push in lock release button lock release button (Figure 15, Item 4) on retaining pin (Figure 15, Item 5), insert retaining pin into upper hole (Figure 15, Item 2) of litter trolley (Figure 15, Item 1) to secure retaining pin in litter trolly while litter trolley is in use.
8. Repeat steps 6 and 7 to release remaining three litter trolleys (Figure 15, Item 1) from home position.

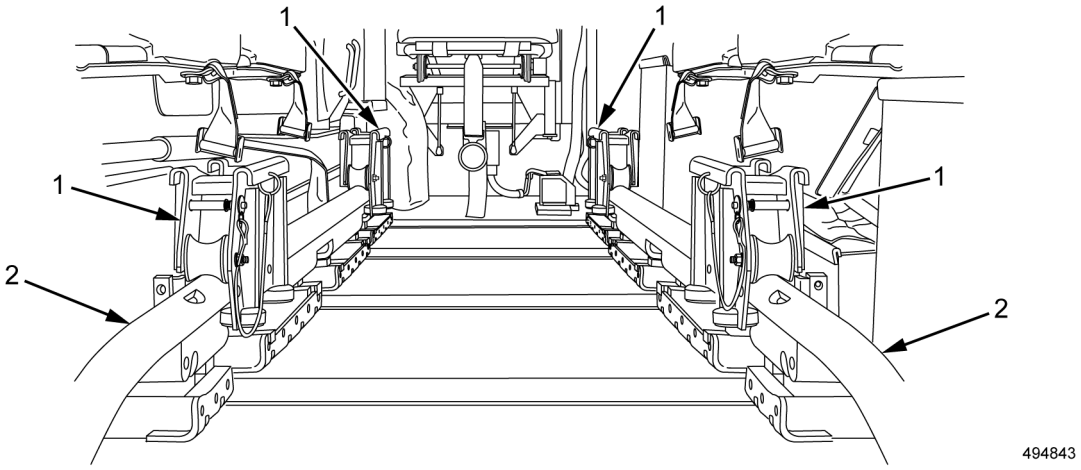


Figure 16. Litter Trolleys over Magnetic Points.

NOTE

Litter rails have four magnetic points for stabilizing litter trolleys during litter removal.

9. Position four litter trolleys (Figure 16, Item 1) over four magnetic points on litter trolley rails (Figure 16, Item 2).

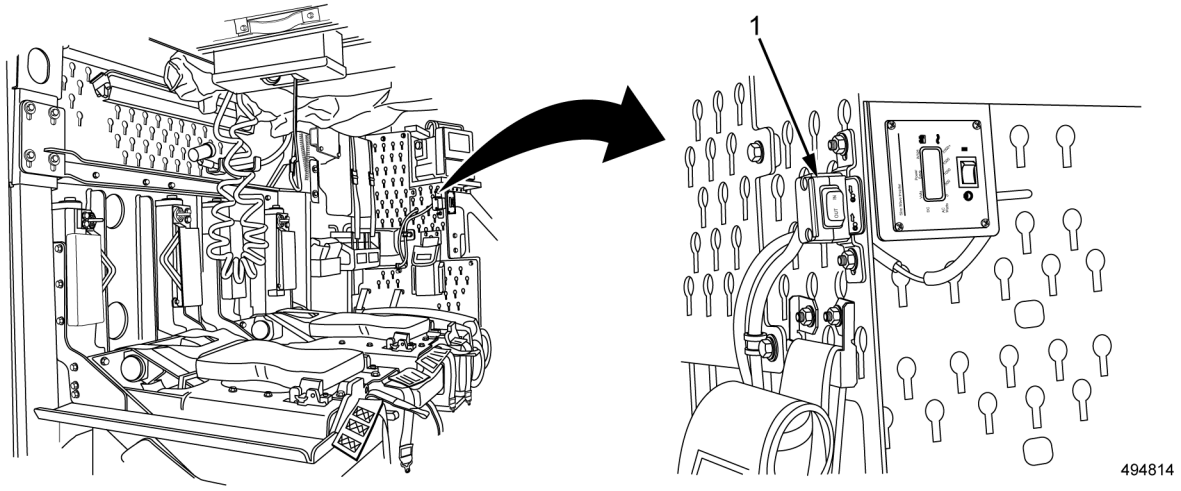


Figure 17. Litter Lift.

WARNING

Ensure litter handles are clear of fixed metal brackets in vehicle during litter lifting. Failure to comply may result in injury to personnel and damage to litter assembly.

10. Use litter lift switch (Figure 17, Item 1) to raise litter lift rope (Figure 18, Item 3) to lift litter.

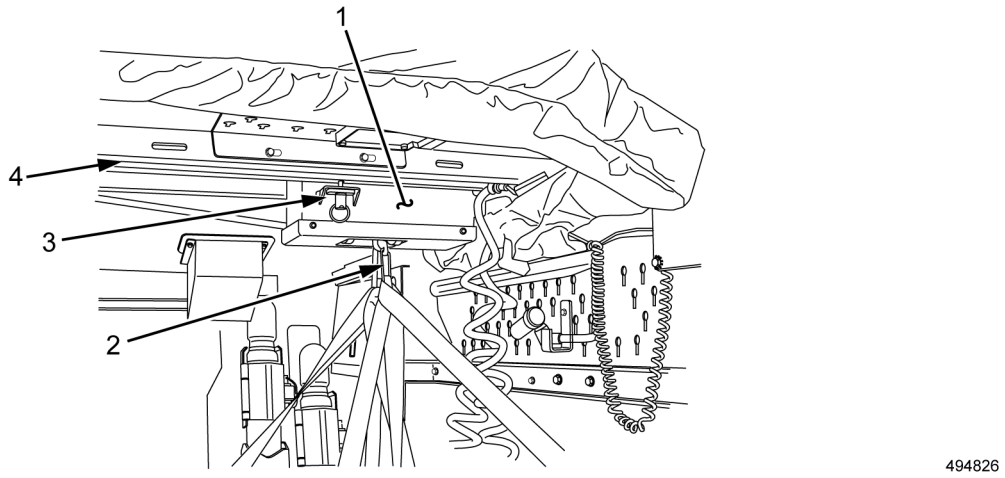


Figure 18. Lifting Litter from Platform.

11. Pull lock pin (Figure 18, Item 3) down and rotate counterclockwise to disengage lock pin from litter lift rail (Figure 18, Item 4).
12. Roll litter lift (Figure 18, Item 1) with litter attached along litter lift rail (Figure 18, Item 4) above litter lift trolleys (Figure 16, Item 1).
13. Rotate lock pin (Figure 18, Item 3) clockwise to engage lock pin in center position on litter lift rail (Figure 18, Item 4).

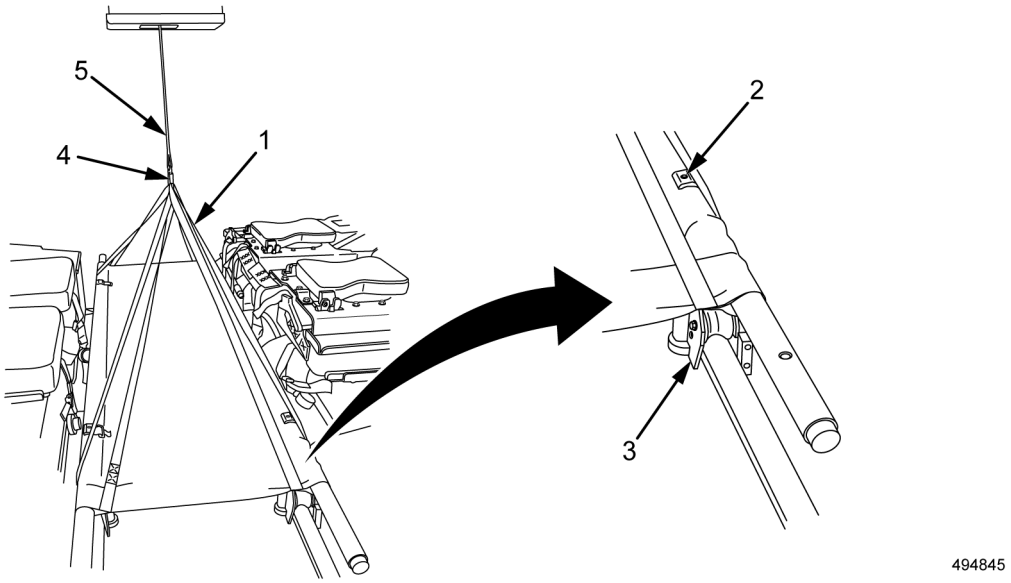


Figure 19. Moving Litter to Litter Trolleys.

WARNING

Ensure litter handles are clear of fixed metal brackets in vehicle during litter lifting. Failure to comply may result in injury to personnel and damage to litter assembly.

14. Use litter lift switch (Figure 17, Item 1) to pay out rope (Figure 19, Item 5) to lower litter (Figure 19, Item 2) onto litter trolleys (Figure 19, Item 3).
15. Remove litter lift straps (Figure 19, Item 1) from carabiner hook (Figure 19, Item 4) and raise rope (Figure 19, Item 5).

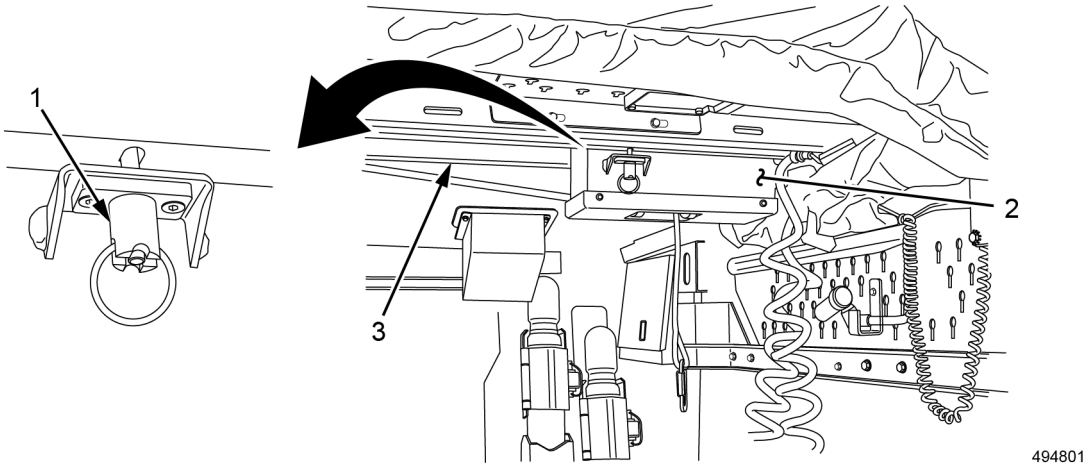


Figure 20. Moving Litter Lift to Home Position.

16. Pull lock pin (Figure 20, Item 1) down and rotate counterclockwise to disengage lock pin from litter lift rail (Figure 20, Item 3).
17. Roll litter lift (Figure 20, Item 2) from center to home position.
18. Rotate lock pin (Figure 20, Item 1) clockwise to engage lock pin and secure litter lift (Figure 20, Item 2) at the home position.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - LITTER TROLLEY AND RAILS OPERATION

INITIAL SETUP:

Personnel Required
Crewmember - (3)

Equipment Condition
Rear door/ramp open (WP 0018)

OPERATING PROCEDURES

Litter Load

WARNING

Keep hands and feet clear of litter trolleys and litter trolley rails during use. Do not use litter trolley rails as hand grip to enter or exit vehicle. Failure to comply may result in injury to personnel.

Use extreme caution when loading and unloading litter as multiple pinch points exist between litter, litter trolleys, and litter trolley rails. Failure to comply may result in injury to personnel or equipment damage.

Litter with personnel is heavy. Do not attempt to lift without assistant. Prior to moving litter, clear path of travel. Failure to comply will result in serious injury to personnel.

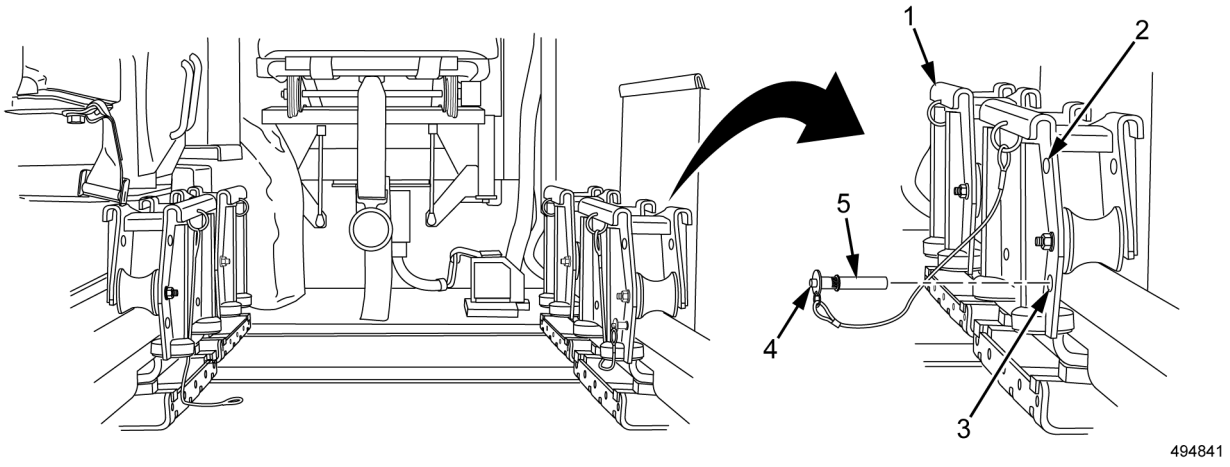


Figure 1. Litter Trolley.

1. While pushing in lock release button (Figure 1, Item 4), remove retaining pin (Figure 1, Item 5) from lower hole (Figure 1, Item 3) on litter trolley (Figure 1, Item 1).
2. While continuing to push in lock release button (Figure 1, Item 4) on retaining pin (Figure 1, Item 5), insert retaining pin into upper hole (Figure 1, Item 2) of litter trolley (Figure 1, Item 1) to secure retaining pin in litter trolley while litter trolley is in use.
3. Repeat steps 1 and 2 to release remaining three litter trolleys (Figure 1, Item 1) from home position.

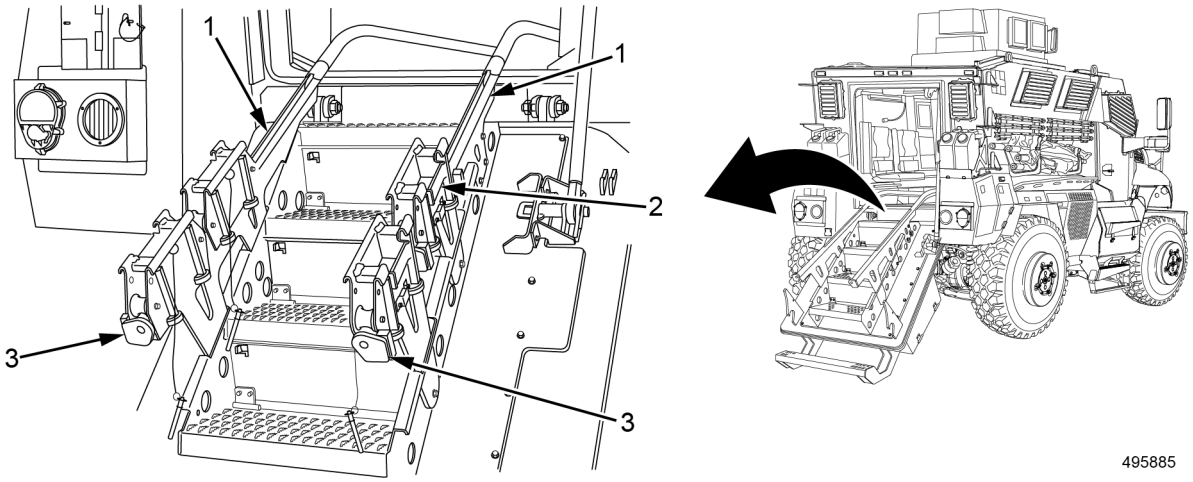


Figure 2. Litter Trolleys and Rails.

4. Move four litter trolleys (Figure 2, Item 2) down litter trolley rails (Figure 2, Item 1) until they reach litter trolley rail stops (Figure 2, Item 3).

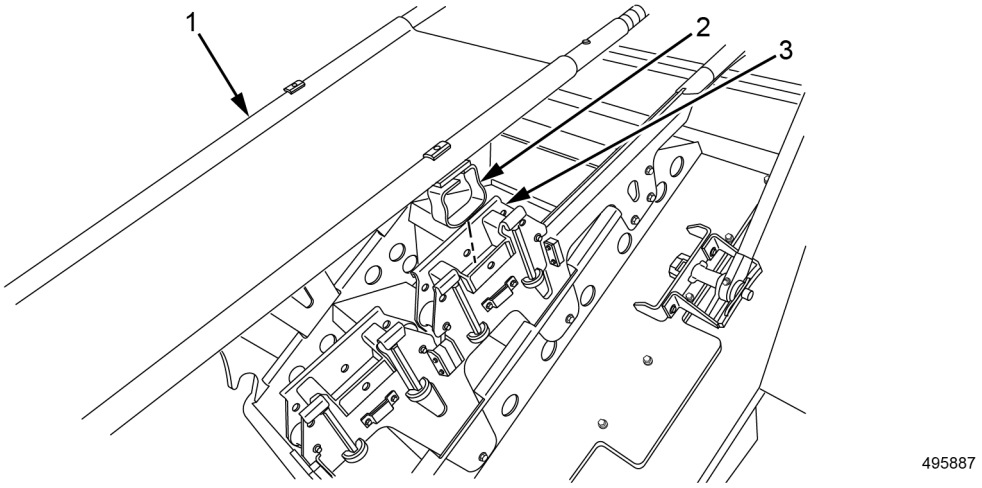


Figure 3. Litter to Trolley Loading.

5. With assistants, position forward litter-to-trolley stands (Figure 3, Item 2) in two forward trolleys (Figure 3, Item 3).
6. With assistants, push litter (Figure 3, Item 1) and two forward trolleys (Figure 3, Item 3) up trolley rails (Figure 2, Item 1).

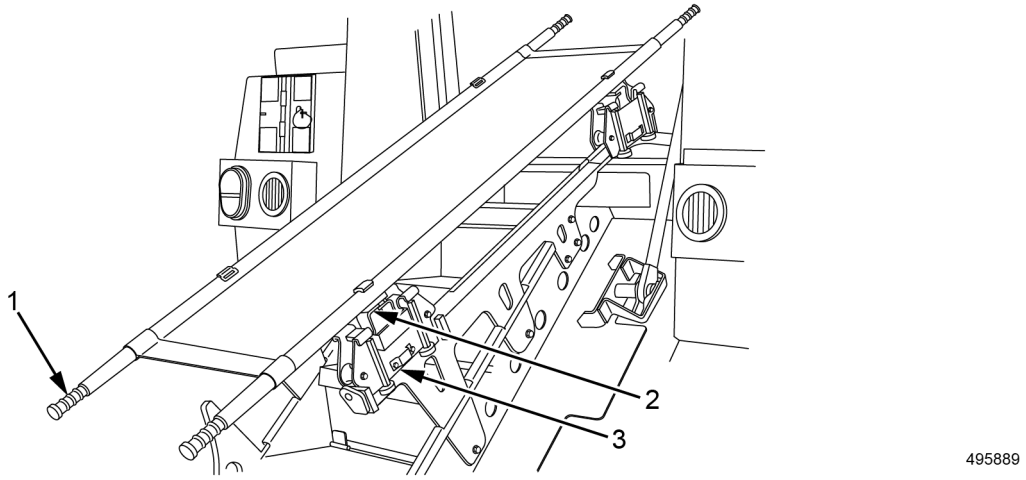


Figure 4. Litter Loading.

7. With assistants, maneuver litter (Figure 4, Item 1) to position rear two litter-to-trolley stands (Figure 4, Item 2) in two rear trolleys (Figure 4, Item 3).

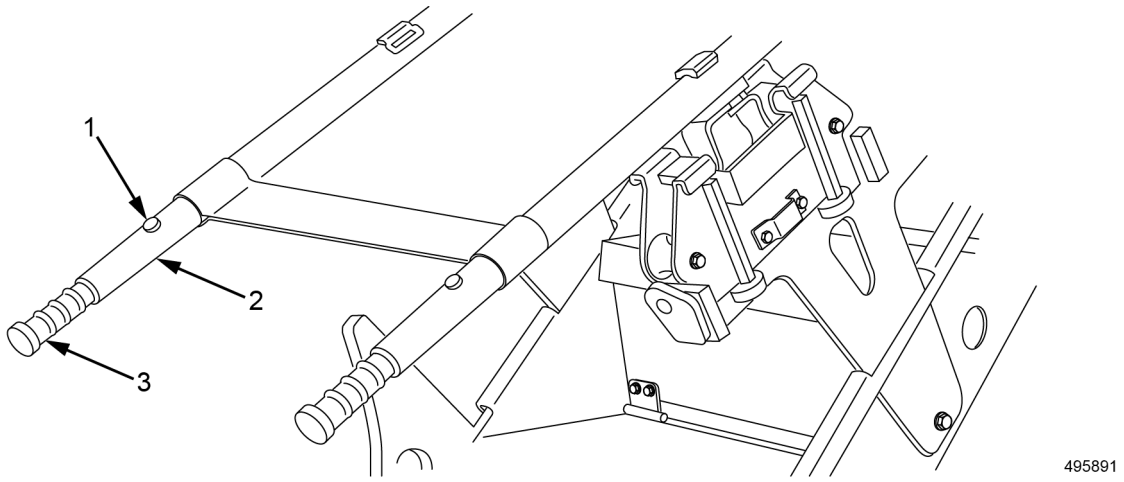


Figure 5. Litter Handle.

NOTE

There are four litter handles. Left rear litter handle shown; others similar.

8. Push four litter handle lock buttons (Figure 5, Item 1) and collapse forward litter handles (Figure 5, Item 3) into litter (Figure 5, Item 2).

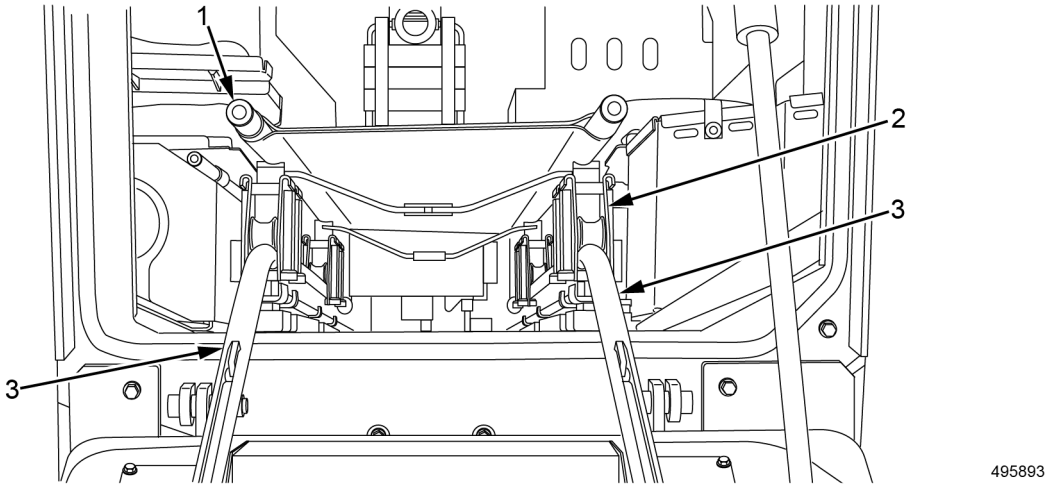


Figure 6. Litter and Trolleys in Loaded Position.

9. Push litter (Figure 6, Item 1) and four trolleys (Figure 6, Item 2) up rails (Figure 6, Item 3) into passenger compartment.

END OF TASK

OPERATING PROCEDURES

Litter Unload

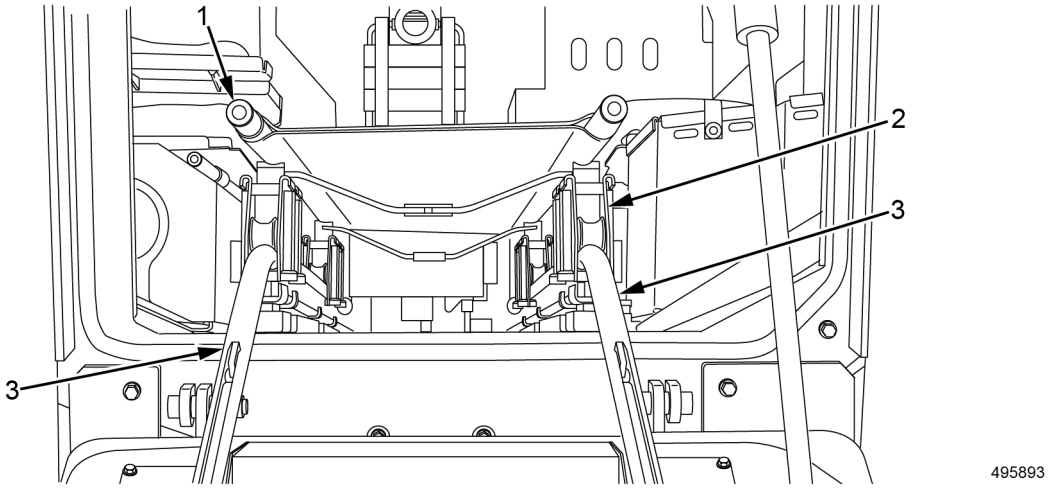


Figure 7. Litter and Trolleys in Loaded Position.

1. With assistants, pull litter (Figure 7, Item 1) and trolleys (Figure 7, Item 2) down rails (Figure 7, Item 3) from passenger compartment.

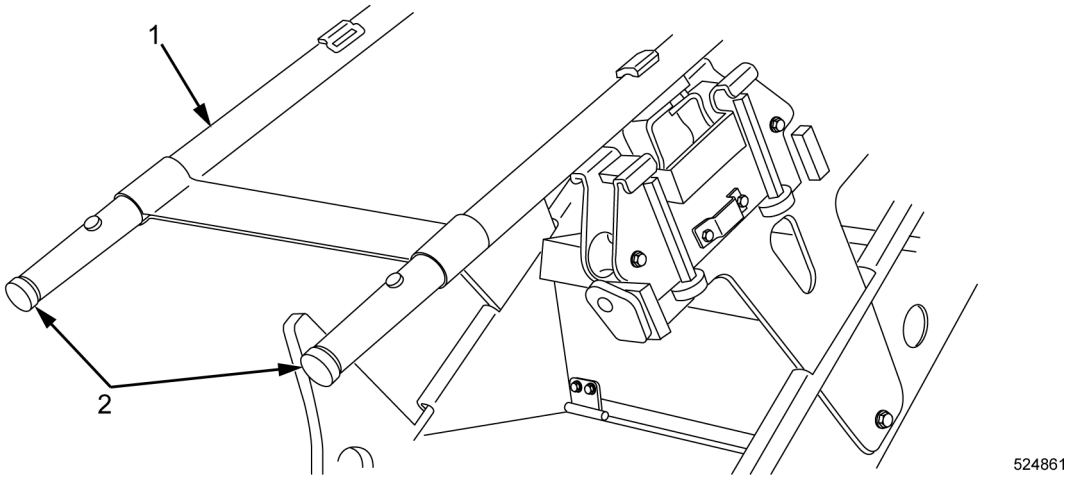


Figure 8. Litter Handles.

NOTE

There are four litter handles. Left rear litter handle shown; others similar.

2. Pull litter handles (Figure 8, Item 2) from litter (Figure 8, Item 1).

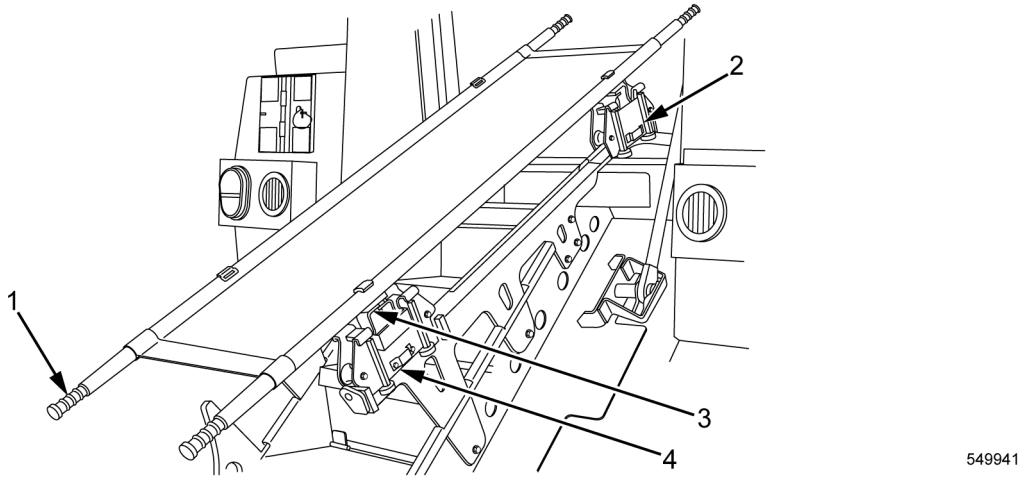


Figure 9. Litter Loading.

3. With assistants, lift rear two litter-to-trolley stands (Figure 9, Item 3) out of rear two trolleys (Figure 9, Item 4) and allow litter (Figure 9, Item 1) and forward two trolleys (Figure 9, Item 4) to move down trolley rails.

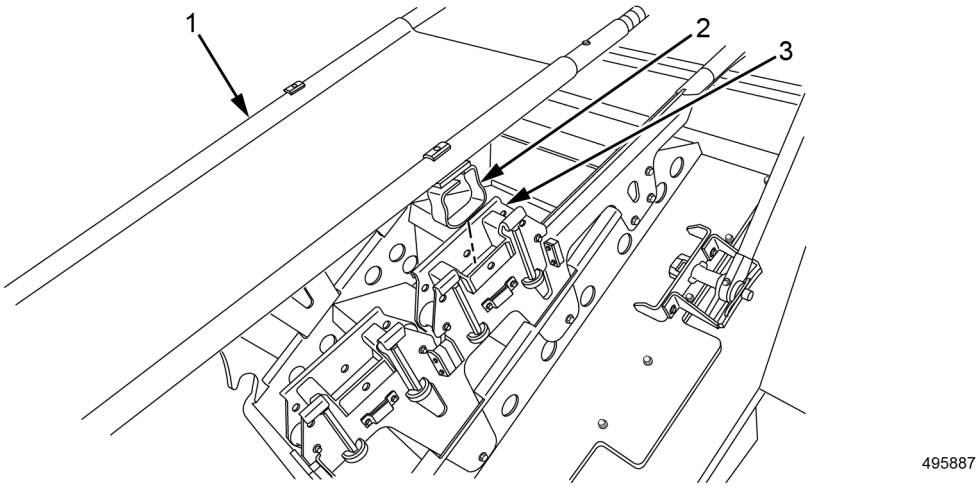


Figure 10. Litter-to-Trolley Loading.

4. With assistants, lift forward two litter-to-trolley stands (Figure 10, Item 2) out of forward two trolleys (Figure 10, Item 3) and remove litter (Figure 10, Item 1) from vehicle.

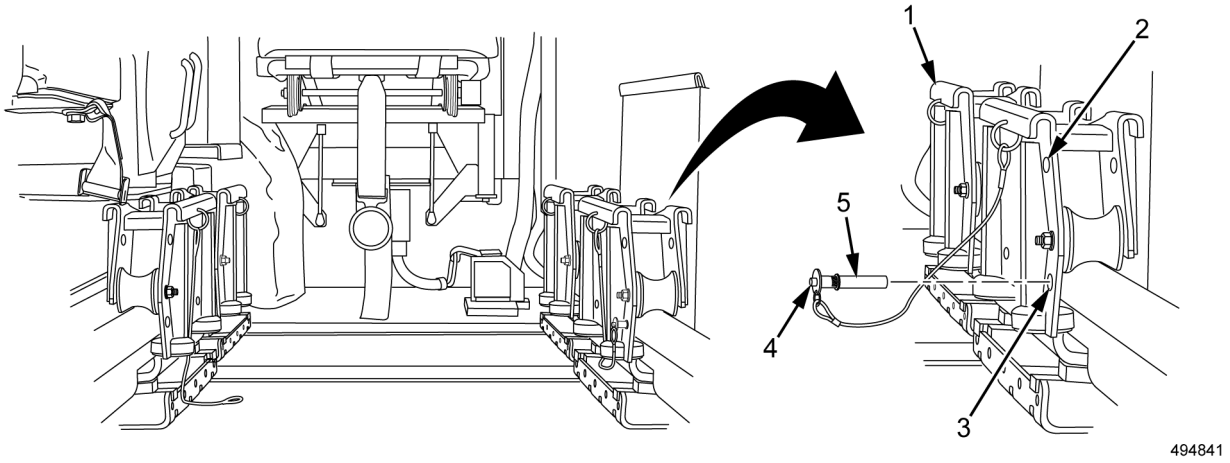


Figure 11. Litter Trolley Home Position.

5. Move four litter trolleys (Figure 11, Item 1) forward to home position.
6. While pushing in lock release button (Figure 11, Item 4), remove retaining pin (Figure 11, Item 5) from upper hole (Figure 11, Item 2) on litter trolley (Figure 11, Item 1).
7. While continuing to push in lock release button (Figure 11, Item 4) on retaining pin (Figure 11, Item 5), insert retaining pin into lower hole (Figure 11, Item 3) of litter trolley (Figure 11, Item 1) to secure litter trolley in home position.
8. Repeat steps 6 and 7 on remaining three litter trolleys (Figure 11, Item 1).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER USUAL CONDITIONS - SECURING MEDICAL EQUIPMENT

INITIAL SETUP:

References
WP 0074

OPERATING PROCEDURES

WARNING

Improperly restrained components in the passenger compartment of vehicle may become projectiles while underway or during a blast event. Ensure all gear is properly restrained. Failure to comply may result in serious injury to personnel or damage to equipment.

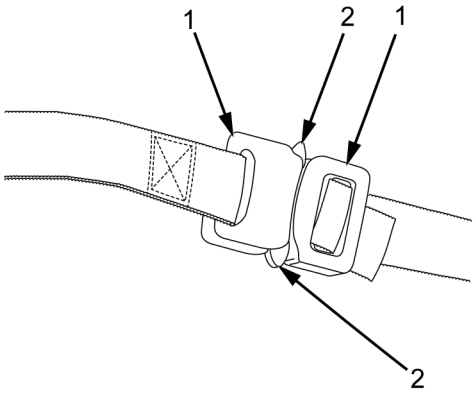
Medical Equipment Restraint Unbuckle

NOTE

Different sizes of medical equipment restraint buckles are used in different areas of the vehicle.

All medical equipment restraint buckles operate the same way; one shown.

Medical equipment restraint buckles are used throughout passenger compartment in stowage area. Refer to WP 0074, On-Vehicle Equipment Load Plan.



507701

Figure 1. Medical Equipment Restraint.

1. Press release buttons (Figure 1, Item 2) and separate medical equipment restraint buckle halves (Figure 1, Item 1).

END OF TASK

OPERATING PROCEDURES

Medical Equipment Restraint Buckle

NOTE

Different sizes of medical equipment restraint buckles are used in different areas of the vehicle.

All medical equipment restraint buckles operate the same way; one shown.

Medical equipment restraint buckles are used throughout passenger compartment. Refer to WP 0074, On-Vehicle Equipment Load Plan.

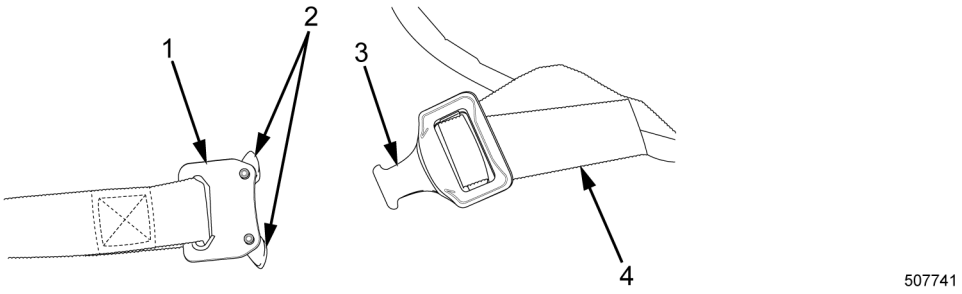


Figure 2. Medical Equipment Restraint.

1. Insert medical equipment restraint buckle tongue (Figure 2, Item 3) into medical equipment restraint buckle receiver (Figure 2, Item 1) until release buttons (Figure 2, Item 2) click in place.
2. Pull strap (Figure 2, Item 4) to adjust medical equipment restraint as required for a snug fit.

END OF TASK

OPERATING PROCEDURES

Oxygen Concentrator Unstow

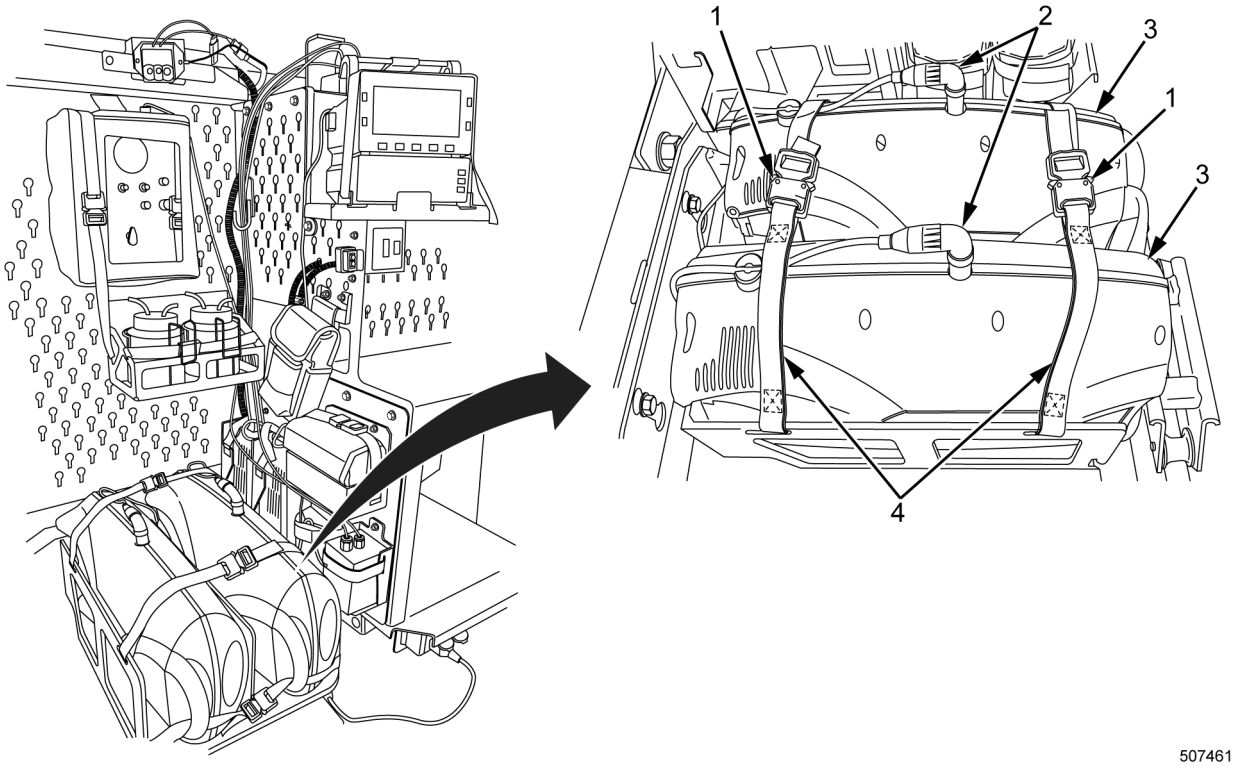


Figure 3. Oxygen Concentrator Restraints.

1. Unbuckle two medical equipment restraint buckles (Figure 3, Item 1) and remove two straps (Figure 3, Item 4) from top of two oxygen concentrators (Figure 3, Item 3).
2. Disconnect two electrical connectors (Figure 3, Item 2) from two oxygen concentrators (Figure 3, Item 3).

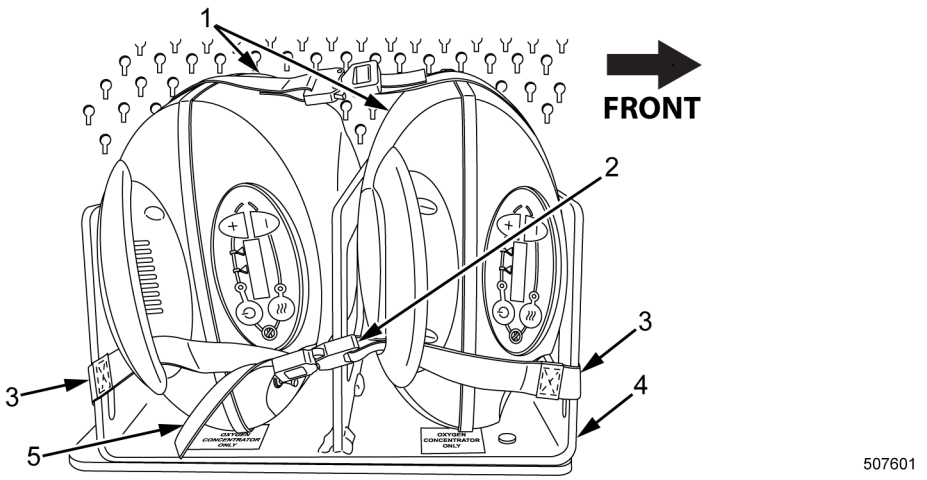


Figure 4. Oxygen Concentrators.

3. Unbuckle medical equipment restraint buckle (Figure 4, Item 2) and remove strap (Figure 4, Item 3) from front of two oxygen concentrator (Figure 4, Item 1) handles.
4. Remove two oxygen concentrators (Figure 4, Item 1) from bracket (Figure 4, Item 4).

END OF TASK

OPERATING PROCEDURES

Oxygen Concentrator Stow

1. Place two oxygen concentrators (Figure 4, Item 1) in bracket (Figure 4, Item 4).
2. Route strap (Figure 4, Item 3) through handles of oxygen concentrators (Figure 4, Item 1).
3. Buckle medical equipment restraint buckle (Figure 4, Item 2) and pull strap (Figure 4, Item 5) until snug.

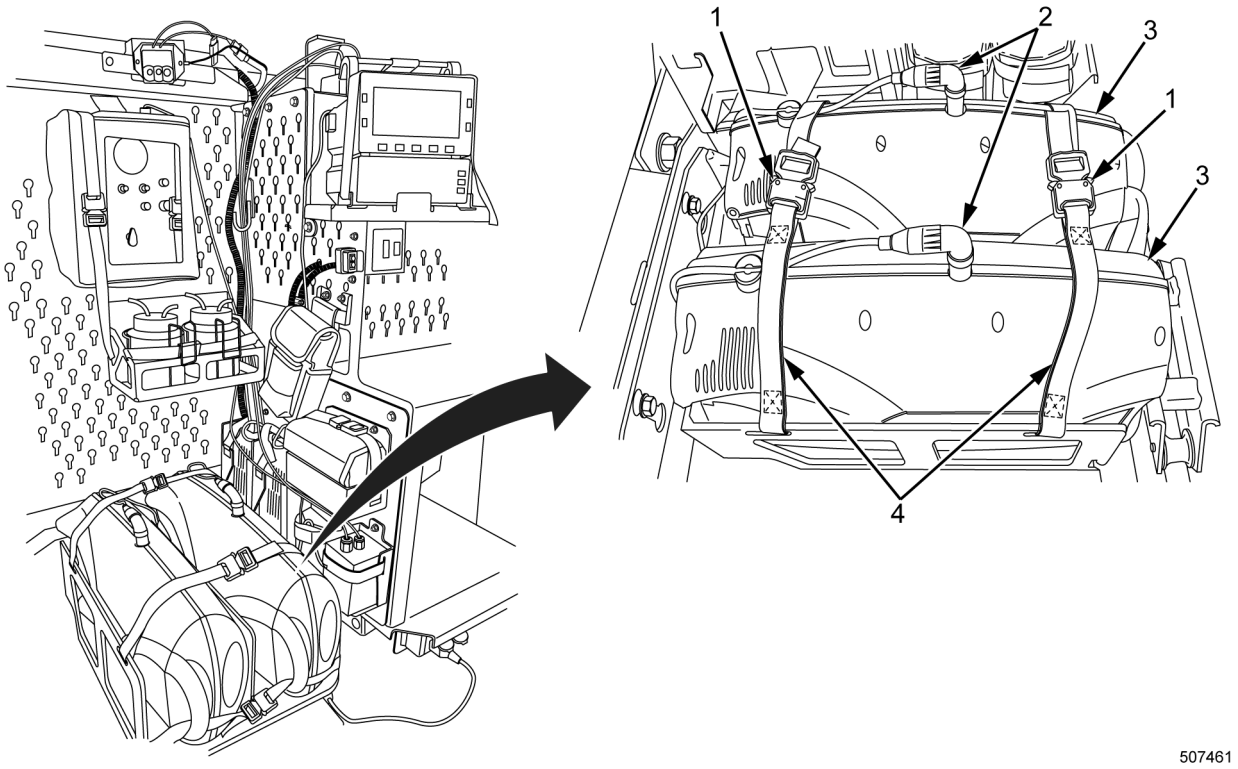


Figure 5. Oxygen Concentrator Restraints.

4. Connect two electrical connectors (Figure 5, Item 2) to two oxygen concentrators (Figure 5, Item 3).
5. Buckle two medical equipment restraint buckles (Figure 5, Item 1) over top of two oxygen concentrators (Figure 5, Item 3).
6. Adjust two straps (Figure 5, Item 4) until snug.

END OF TASK

OPERATING PROCEDURES

Vital Sign Monitor (VSM) Unstow

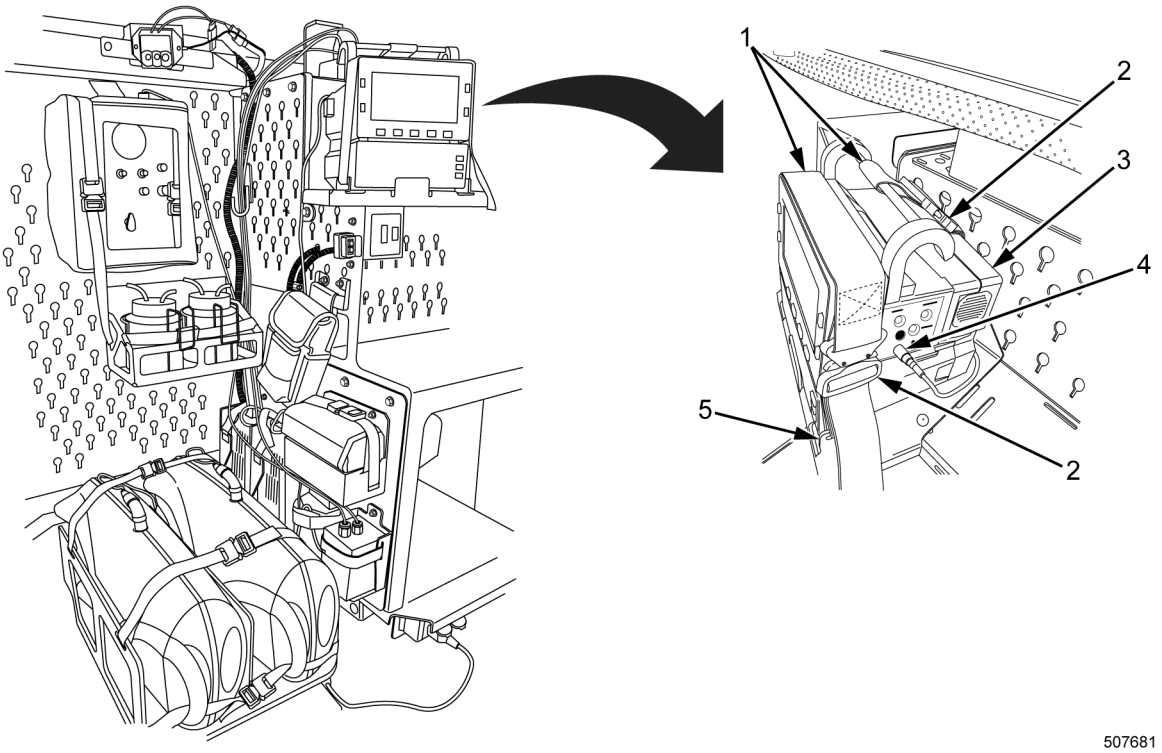


Figure 6. Vital Sign Monitor (VSM).

1. Disconnect electrical connector (Figure 6, Item 4) from VSM (Figure 6, Item 3).
2. Unbuckle two medical equipment restraint buckles (Figure 6, Item 2) and remove straps (Figure 6, Item 1) from Vital Sign Monitor (VSM) (Figure 6, Item 3).
3. Remove VSM (Figure 6, Item 3) from bracket (Figure 6, Item 5).

END OF TASK

OPERATING PROCEDURES

VSM Stow

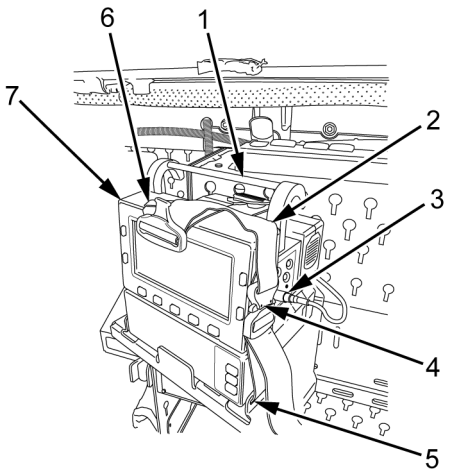


Figure 7. VSM.

1. Position all straps (Figure 7, Item 2 and 7) away from bracket (Figure 7, Item 5).
2. Place VSM (Figure 7, Item 6) in bracket (Figure 7, Item 5).
3. Route strap (Figure 7, Item 2) over VSM (Figure 7, Item 6) and buckle medical equipment restraint buckle (Figure 7, Item 4).
4. Route top strap (Figure 7, Item 7) forward under VSM handle (Figure 7, Item 1).
5. Route top strap (Figure 7, Item 7) over VSM handle (Figure 7, Item 1) and buckle medical equipment restraint buckle (Figure 7, Item 4).
6. Adjust straps (Figure 7, Item 2 and 7) to ensure a snug fit.
7. Connect electrical connector (Figure 7, Item 3) to VSM (Figure 7, Item 6).

END OF TASK

OPERATING PROCEDURES

Interior Oxygen Bottle Unstow

NOTE

Both interior oxygen bottles are unstowed the same way; one shown.

It may be necessary to apply additional pressure to bracket cover while removing retaining pin.

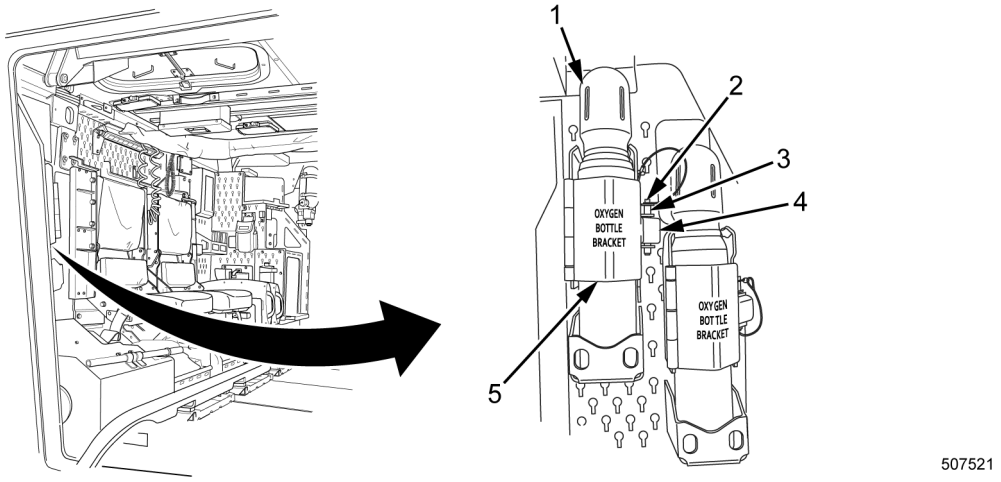


Figure 8. Oxygen Bottles.

1. Press button (Figure 8, Item 2) on retaining pin (Figure 8, Item 3) while removing pin from oxygen bottle bracket (Figure 8, Item 4) and oxygen bottle bracket cover (Figure 8, Item 5).
2. Swing oxygen bottle bracket cover (Figure 8, Item 5) open and remove oxygen bottle (Figure 8, Item 1) from oxygen bottle bracket (Figure 8, Item 4).

END OF TASK

OPERATING PROCEDURES

Interior Oxygen Bottle Stow

NOTE

Both interior oxygen bottles are unstowed the same way; one shown.

It may be necessary to apply additional pressure to bracket cover while installing retaining pin.

1. Position oxygen bottle (Figure 8, Item 1) in oxygen bottle bracket (Figure 8, Item 4).
2. Close oxygen bottle bracket cover (Figure 8, Item 5).
3. While holding button (Figure 8, Item 2) down, secure oxygen bottle (Figure 8, Item 1) and oxygen bottle bracket cover (Figure 8, Item 5) in oxygen bottle bracket (Figure 8, Item 4) with retaining pin (Figure 8, Item 3).

END OF TASK

OPERATING PROCEDURES

Suction Apparatus Unstow

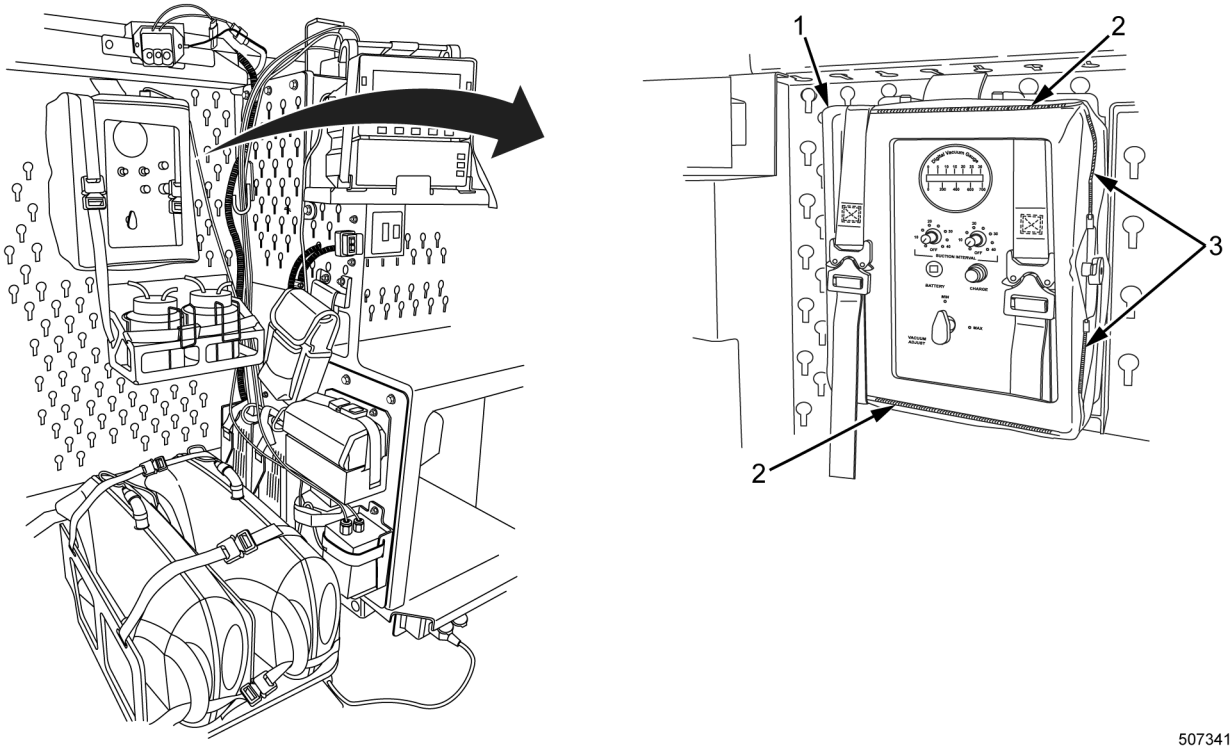


Figure 9. Suction Apparatus Straps.

1. Disconnect two hook and loop tape tabs (Figure 9, Item 3) on suction apparatus case (Figure 9, Item 1).
2. Unzip top and bottom zippers (Figure 9, Item 2) and open suction apparatus case (Figure 9, Item 1).

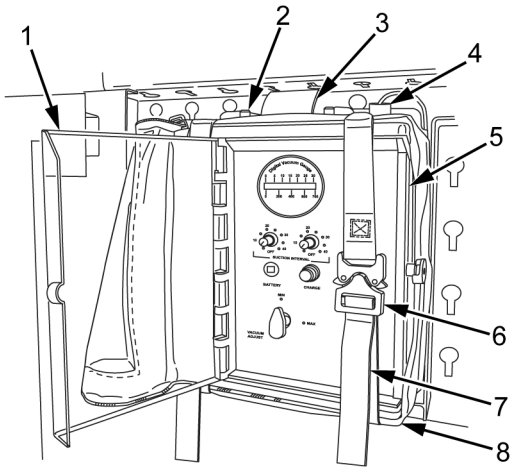


Figure 10. Suction Apparatus.

3. Open suction apparatus door (Figure 10, Item 1) to use suction apparatus (Figure 10, Item 5).

NOTE

Steps 4 through 7 are performed only if removing suction apparatus from vehicle.

4. Remove electrical connector (Figure 10, Item 4) from suction apparatus (Figure 10, Item 5).
5. Remove hook and loop tape (Figure 10, Item 3) from suction apparatus handle (Figure 10, Item 2).

NOTE

Left medical restraint buckle is connected outside the front flap of suction apparatus case.

6. Unbuckle two medical equipment restraint buckles (Figure 10, Item 6) and move straps (Figure 10, Item 7) aside.
7. Remove suction apparatus (Figure 10, Item 5) from suction apparatus case (Figure 10, Item 8).

END OF TASK

OPERATING PROCEDURES

Suction Apparatus Stow

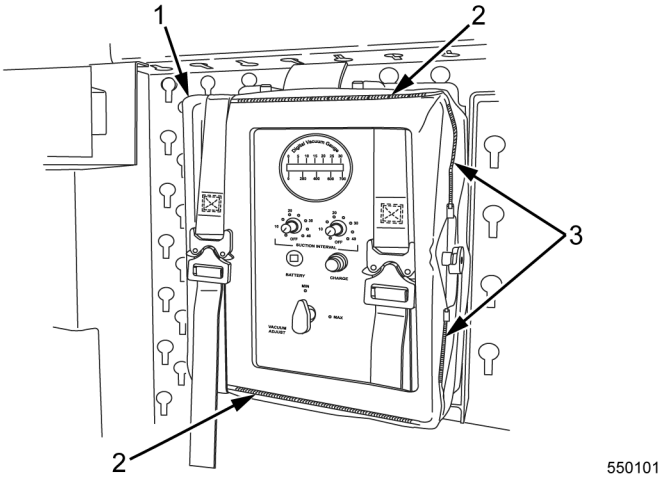


Figure 11. Suction Apparatus.

NOTE

Steps 1 through 6 are performed If suction apparatus was removed from vehicle.

1. Secure cover of suction apparatus case (Figure 11, Item 1) with two hook and loop tape tabs (Figure 11, Item 3) located at the back at the bottom of the suction apparatus case.
2. Position suction apparatus (Figure 10, Item 5) in suction apparatus case (Figure 10, Item 8).
3. Wrap hook and loop tape strap (Figure 10, Item 3) around suction apparatus handle (Figure 10, Item 2).
4. Connect electrical connector (Figure 10, Item 4) to suction apparatus (Figure 10, Item 5).
5. Open suction apparatus door (Figure 10, Item 1).
6. Connect right medical equipment restraint buckle (Figure 10, Item 6) over suction apparatus (Figure 10, Item 5), and adjust right strap (Figure 10, Item 7) for a snug fit.

CAUTION

Do not force suction apparatus door closed with medical restraint strap buckled inside door. Failure to comply may result in damage to equipment.

7. Close suction apparatus door (Figure 10, Item 1).
8. Connect two hook and loop tape tabs (Figure 11, Item 3) on suction apparatus case (Figure 11, Item 1).
9. Close top and bottom zippers (Figure 11, Item 2) on suction apparatus case (Figure 11, Item 1).

NOTE

Left medical restraint buckle is connected outside the front flap of suction apparatus case.

10. Connect left medical equipment restraint buckle (Figure 10, Item 6) over suction apparatus case (Figure 10, Item 8), and adjust left strap (Figure 10, Item 7) for a snug fit.

END OF TASK

OPERATING PROCEDURES

Electrical Cable Routing

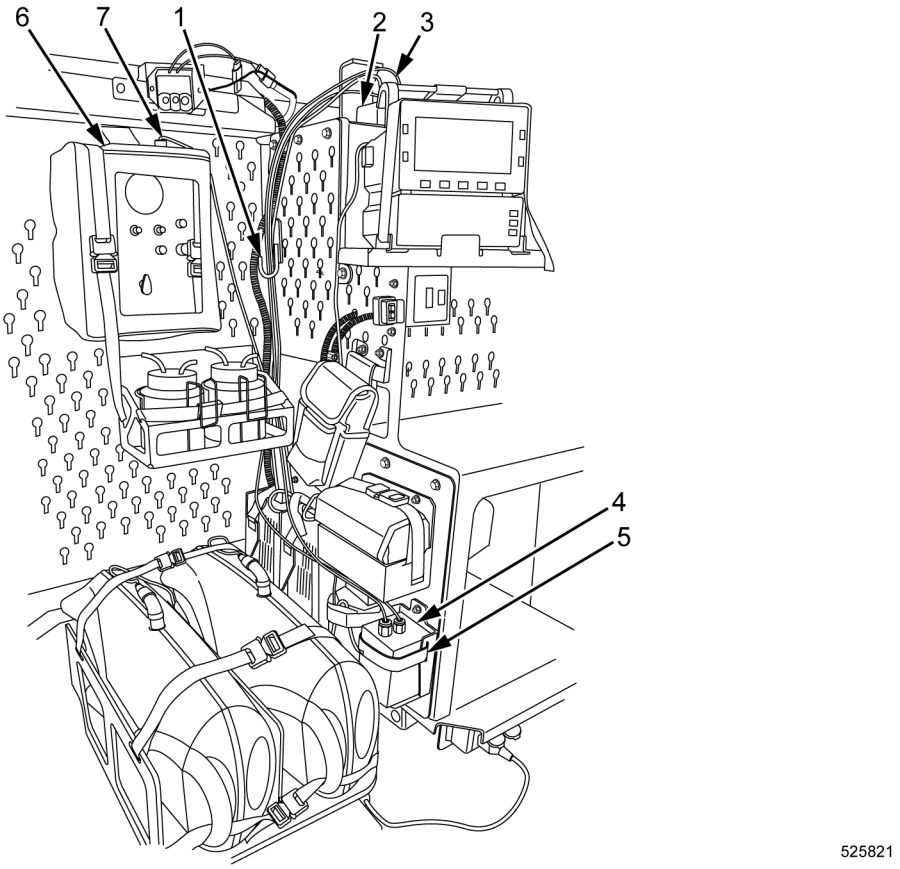


Figure 12. Suction Apparatus Cable Routing.

NOTE

All medical equipment excess electrical cables should be secured, strapped down, and out of the way.

1. Route suction apparatus electrical cable (Figure 12, Item 7) from suction apparatus power pack (Figure 12, Item 4) to suction apparatus (Figure 12, Item 6).
2. Route suction apparatus electrical cable (Figure 12, Item 3) from suction apparatus power pack (Figure 12, Item 4) behind hook (Figure 12, Item 1) and to upper 110V power strip (Figure 12, Item 2).
3. Secure excess suction apparatus electrical cable (Figure 12, Item 3 and 7) with hook and loop tape strap (Figure 12, Item 6).

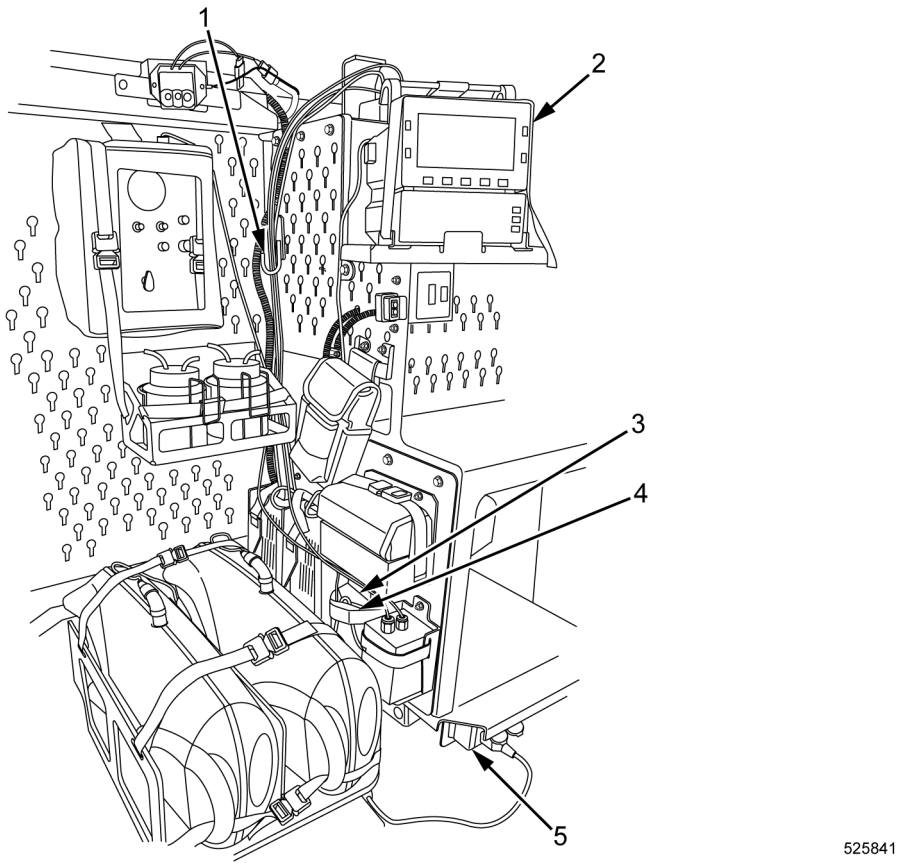


Figure 13. VSM Cable Routing.

4. Route electrical cable from VSM power pack (Figure 13, Item 3) behind hook (Figure 13, Item 1) and to VSM (Figure 13, Item 2).
5. Route electrical cable from VSM power pack (Figure 13, Item 3) to lower 110V power strip (Figure 13, Item 5).
6. Secure excess electrical cable with hook and loop tape strap (Figure 13, Item 4).

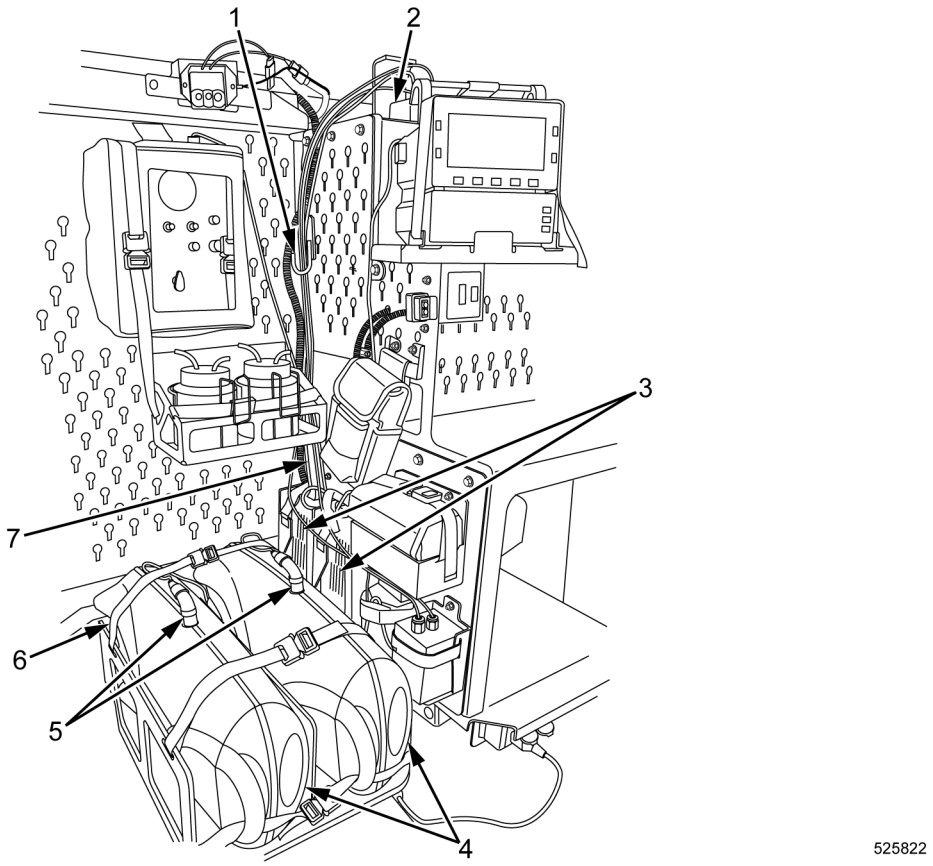


Figure 14. Oxygen Concentrator Cable Routing.

7. Route oxygen concentrator electrical cables (Figure 14, Item 5) from oxygen concentrator battery backups (Figure 14, Item 3) to oxygen concentrators (Figure 14, Item 4).
8. Route oxygen concentrator electrical cables (Figure 14, Item 7) from oxygen concentrator battery backups (Figure 14, Item 3) behind hook (Figure 14, Item 1) and to upper 110V power strip (Figure 14, Item 2).
9. Secure excess oxygen concentrator electrical cable (Figure 14, Item 5 and 7) with strap (Figure 14, Item 6).

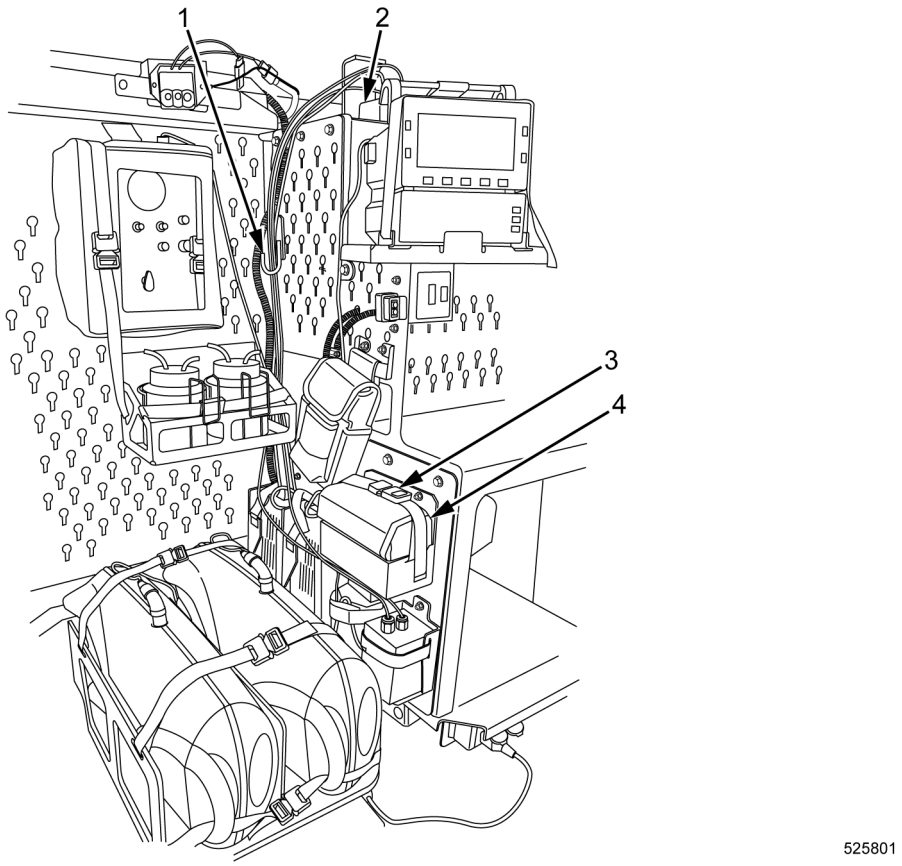


Figure 15. Blood Warmer Cable Routing.

10. Route electrical cables of blood warmer (Figure 15, Item 4) behind hook (Figure 15, Item 1) to upper 110V power strip (Figure 15, Item 2).
11. Secure excess electrical cable with medical restraint strap (Figure 15, Item 3).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - SIDE DOORS OPERATION WITH ROCKET PROPELLED GRENADE (RPG) NETS

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)

UNUSUAL ENVIRONMENT/WEATHER

WARNING

Do not use side door handles as hand grip to enter or exit vehicle cabin. Use of any side door handle as hand grip may cause air-assisted side door to open or close. Failure to comply may result in injury or death to personnel.

Do not use steering wheel as hand grip to enter or exit vehicle cab. Use of steering wheel for hand grip may cause sudden violent jerking of vehicle or damage to adjustable steering wheel bearing. When entering or exiting cab, use three-point contact system. Failure to comply may result in injury or death to personnel and/or damage to equipment.

The side doors are heavy. Ensure that no one is standing directly behind the door before opening and closing it. Ensure that hands and feet are clear of the area before closing the door. Use caution when opening or closing the doors, especially when the vehicle is parked on an incline. Failure to comply may result in injury to personnel.

Ensure that hands and feet are clear of the Rocket Propelled Grenade (RPG) nets before opening or closing side doors. Hands and feet can become entangled in the RPG nets. Failure to comply may result in serious injury to personnel and/or damage to equipment.

NOTE

Commander side shown; driver side similar.

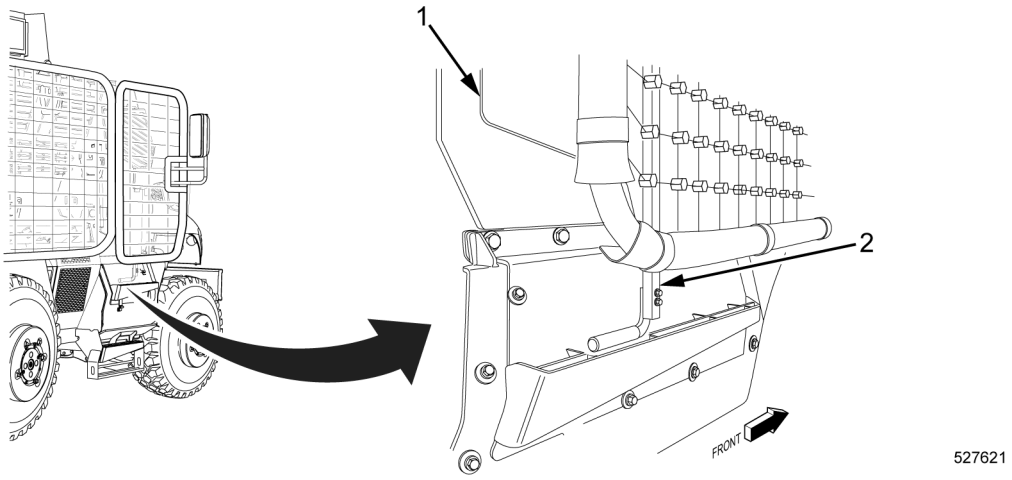


Figure 1. Side Door.

1. Pull on exterior door handle (Figure 1, Item 2) with steady pressure to open side door (Figure 1, Item 1).

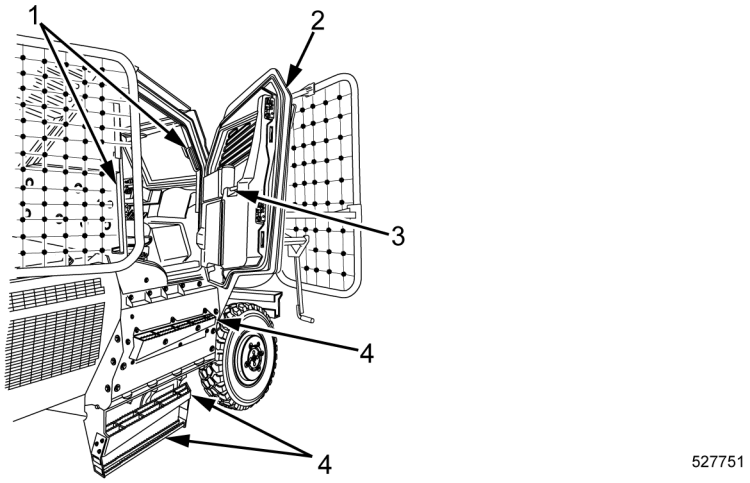


Figure 2. Grab Handles, Steps, and Interior Door Handle.

2. Enter cabin using grab handles (Figure 2, Item 1) and steps (Figure 2, Item 4).
3. Pull on interior door handle (Figure 2, Item 3) with steady pressure to close side door (Figure 2, Item 2).
4. When exiting vehicle from cabin, push on interior door handle (Figure 2, Item 3) to open side door (Figure 2, Item 2).
5. Exit cabin using grab handles (Figure 2, Item 1) and steps (Figure 2, Item 4).
6. Push exterior door handle (Figure 1, Item 2) to close side door (Figure 1, Item 1).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - EXTREME HEAT AND/OR DUST

INITIAL SETUP:

References
WP 0004
WP 0016
WP 0069
WP 0089
WP 0091
TB-MED 507

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

UNUSUAL ENVIRONMENT/WEATHER

WARNING

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with Standard Operating Procedures (SOP). Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel.

Do not fill fuel tank with engine running. Do not overfill fuel tank. Clean fuel spills immediately according to SOP. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Driver must visually check to make sure all areas of the vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury and/or death to personnel.

Personnel must utilize seat restraints, and each occupant must ensure that their seat restraint is properly fastened and adjusted. Avoid twisting the straps when putting the seat belt on and be sure to remove slack so the harness provides maximum protection in the event of an accident. Failure to comply may result in death or injury to personnel.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoids side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

The driver’s field of view is limited. Ensure that the mirrors are positioned so as to allow for a maximum range of vision prior to vehicle operation. Ground Guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of the vehicle and remain within view of the driver. Failure to comply may lead to a vehicle collision/accident resulting in injury or death to personnel and/or damage to equipment

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the Central Tire Inflation System (CTIS) Driver Display Module (DDM) can help identify a tire problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment.

In extreme temperature environments, follow work-rest schedules as well as the guidance of TB-MED 507, Heat Stress Control and Heat Stress Management. Failure to comply may result in injury to personnel.

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in injury to personnel or damage to equipment.

CAUTION

Temperatures may change as much as 70°F (21°C) between day and night. Due to expansion and contraction of all fluids, use care when filling fuel tank and fluid reservoirs to prevent overflow when temperatures change. (Filling tank full of cold fuel may cause fuel tank to overflow when fuel expands as fuel heats up.) Failure to comply may result in damage to equipment.

The engine oil pressure has three monitoring systems: RED indicator light on OIL PSI gauge, RED ENGINE light, and OIL PSI gauge. If any two of the three systems indicate a problem, park vehicle, shut down engine, and notify Field Level Maintenance. If only one system indicates a problem and the other two are operating normally, proceed with mission and notify Field Level Maintenance upon completion. Failure to comply may result in damage to equipment.

The engine coolant temperature has three monitoring systems: WATER temperature gauge, RED ENGINE light, and WATER temperature gauge RED indicator light. If any two of the three indicate a problem, park vehicle and allow engine to idle until water temperature cools down. If coolant temperature does not go down, shut down engine and notify Field Level Maintenance. Failure to comply may result in damage to equipment.

Moisture and dirt in the filter elements will plug the filters and cause engine damage. Monitor AIR FILTER RESTRICTION gauge when operating vehicle in mud, sand, or snow. If AIR FILTER RESTRICTION gauge indicates a problem, notify Field Level Maintenance.

When operating vehicle in temperatures above 100°F (38°C), use care to prevent engine overheating. Observe WATER and TRANS temperature gauges closely. Failure to comply may result in damage to equipment.

Check fluid levels often in extreme heat. Vehicle cooling and lubrication systems support each other. Failure to comply may cause failure of other systems, and will cause damage to equipment.

NOTE

Above-normal coolant temperature can occur while driving with the transmission in a gear ratio that is too high for low speed operation. To correct this, engine speed should be increased by shifting into the next lower gear to increase engine rpm. This will increase coolant flow through the radiator.

1. Check all fluids and oil levels often.
2. Check AIR FILTER RESTRICTION gauge frequently. If indicator shows RED and stays there, service filters. Refer to WP 0091, Air Cleaner Assembly Service.
3. Keep windshield, windows, mirrors, headlights, stoplights, and marker lights clean and dust free. Use windshield wipers and washer fluid to keep windshield free of dust. Refer to WP 0089, Vehicle Cleaning.
4. Monitor temperature gauges. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

NOTE

Steps 5 through 7 are performed if WATER temperature gauge indicates WATER temperature above 220°F (104°C).

5. Downshift transmission to slow vehicle. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
6. When WATER temperature gauge reads normal, upshift transmission and continue mission. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
7. If WATER temperature gauge does not return to normal, refer to WP 0069, Emergency Operation - Operating Vehicle During Engine Overheating.
8. Allow engine to cool before refilling fuel tank, to prevent condensation.
9. Keep the external surface of the engine, radiator, air conditioning condensers, and accessories clean to avoid dirt buildup or damage.
10. Inspect the radiator, A/C condensers, and accessories more frequently for dirt buildup or damage.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - MUD, SAND, AND/OR SNOW

INITIAL SETUP:

References
WP 0002
WP 0004
WP 0012
WP 0013
WP 0016
WP 0017
WP 0035
WP 0089
WP 0091
WP 0104
TB-MED 507
TB-MED 508

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

UNUSUAL ENVIRONMENT/WEATHER

WARNING

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Driver must visually check to make sure all areas of the vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury and/or death to personnel.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoid side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Slopes and hills normally traversable may become slippery when covered with mud, sand, or snow. Approach slopes head-on and avoid side slopes whenever possible, vehicle may roll over. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

Ensure tire pressures are properly maintained for normal operations unless or until road/terrain conditions require adjusted pressures. Incorrect or low air pressures can result in tire failures and could lead to an accident. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Make sure the rear differential on vehicle is locked before driving on sand, mud, or soft terrain to provide maximum traction and equal power to both rear wheels. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Driving in mud can degrade vehicle braking and speed up brake shoe wear. If braking degrades while operating in mud, clean brakes by driving vehicle approximately 500 ft (153 m) with service brake applied. This must be done with brake rotors totally out of mud so the drying action can take place. If braking is not restored by drying brakes, stop vehicle as soon as possible and notify Field Level Maintenance. Failure to comply will result in impaired braking ability that can cause serious injury or death to personnel and/or damage to equipment.

Do not exceed 20 mph (32 kph) when driving on sand, mud, or soft terrain as it may result in loss of vehicle control. If vehicle exceeds 28 mph (45 kph) when DIFF LOCK is engaged, DIFF LOCK will disengage, light on switch will flash rapidly, and alarm will sound five times indicating wheel speed was exceeded. To avoid loss of vehicle control, slow vehicle and cycle DIFF LOCK switch to engage DIFF LOCK. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Do not use cruise control system in heavy traffic or on roads that are winding, snow or ice covered, or have a slippery or loose surface. Unpredictable driving conditions may cause wheel slippage and loss of vehicle control. Failure to comply may result in serious injury or death to personnel.

In extreme temperature environments, follow work-rest schedules as well as the guidance of TB-MED 507, Heat Stress Control and Heat Stress Management and TB-MED 508, Prevention and Management of Cold Weather Injuries.

CAUTION

Temperatures may change as much as 70°F (21°C) between day and night. Due to expansion and contraction of all fluids, use care when filling fuel tank and fluid reservoirs to prevent overflow when temperatures change. (Filling tank full of cold fuel may cause fuel tank to overflow when fuel expands as fuel heats up.) Failure to comply may result in damage to equipment.

Moisture and dirt in the filter elements will plug the filters and cause engine damage. Monitor air cleaner restriction gauge when operating vehicle in mud, sand, or snow. If air cleaner restriction gauge indicates a problem, notify Field Level Maintenance.

NOTE

For tire pressures, speeds, and grade restrictions, refer to WP 0002, Equipment Description and Data and WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.

Vehicle may need to be driven forward or backward several feet to engage rear differential lock. If RR AXLE DIFF LOCK light on IP cluster does not illuminate, or GREEN LED on switch flashes, notify Field Level Maintenance.

1. Check AIR FILTER RESTRICTION gauge frequently.
2. If indicator shows RED and stays there, replace filters. Refer to WP 0091, Air Cleaner Assembly Service.
3. Place transmission gear selector in DRIVE (D).
4. Manually select SECOND or THIRD gear to avoid wheel spin. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
5. For better traction, keep speeds low and operate in low four-wheel drive range. Refer to WP 0017, Operation Under Usual Conditions - Four Wheel Drive Operation.
6. Begin driving vehicle slowly. Do not spin wheels when beginning to move vehicle.
7. Keep accelerator control steady after vehicle reaches a desired speed.
8. Turn vehicle slowly when on loose or slippery surfaces. Turning too fast could cause vehicle to get stuck.
9. When driving over hills, steer vehicle straight up and down hills whenever possible.
10. Activate turn signals sooner than required, to give early warning to following vehicles. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
11. Apply service brakes sooner than normal by lightly pressing brake pedal. This will give early warning to the following vehicles that you will be slowing or stopping and allow for additional stopping distance.
12. Keep windshield, windows, mirrors, headlights, stoplights, and marker lights clean and free of mud, snow, and ice. Use defroster, windshield wipers, and washer fluid to keep windshield free of mud, snow, and ice. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
13. After driving through slush or water, drive slowly and test service brakes.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Vehicle Does Not Slow Down

1. Turn hazard flashers ON until brake control is regained. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. Continue to drive slowly.
3. To dry out brake pads, lightly press and hold service brake pedal 5 to 10 seconds at a time, while lightly applying accelerator (this will cause a slight drag to dry the brake pads). You should only have to do this two to three times to dry brakes.
4. Resume appropriate driving speed.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Front Wheel Skid

1. Let up slowly on accelerator pedal.
2. If applying service brakes, release service brakes. This allows front wheels to roll and regain traction.
3. If turning vehicle, straighten wheels to regain traction.
4. Do not oversteer during these conditions. Oversteering will cause loss of control of the vehicle.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Rear Wheel Skid

1. Let up slowly on accelerator pedal. This causes rear wheels to regain traction.
2. If applying service brakes, release service brakes. This allows rear wheels to roll and regain traction.
3. Steer vehicle towards direction rear wheels are sliding.
4. Do not oversteer during these conditions. Oversteering will cause loss of control of the vehicle.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Muddy Surfaces

1. Reduce tire pressure as required. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.
2. Upshift or downshift transmission as required. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
3. Use slow travel speed, especially where conditions under surface are unknown.
4. If vehicle starts to lose momentum, downshift transmission. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Mud-Filled Holes

NOTE

Mud-filled holes should be avoided whenever possible if depth is uncertain.

1. Advance slowly until wheels of second axle are entering mud.
2. If front wheels are still in contact with ground, accelerate to gain enough momentum to leave mud hole.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Dusty Or Sandy Conditions

1. Monitor AIR FILTER RESTRICTION gauge more frequently.
2. With engine OFF, check and clean dust, sand, or debris in or around radiator and radiator fins. Refer to WP 0089, Vehicle Cleaning.
3. Make sure radiator cap is intact and secure.
4. Keep equipment as dust-free as possible.
5. Protect optical parts from etching sand or dust. Remove any accumulated sand or dust from operating controls.
6. Ensure weapons and periscopes are protected from blowing sand.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Hard-Packed Wet Sand

1. Maintain momentum and engine rpm by upshifting or downshifting transmission. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
2. Make turns gradually to help maintain momentum.
3. Do not stop until clear of wet sand.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Loose Dry Sand

1. Reduce tire pressure as required. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.
2. Upshift or downshift transmission as required. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
3. Maintain momentum and engine rpm by upshifting or downshifting transmission. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
4. Avoid sharp turns. Make gradual turns to maintain momentum.
5. Avoid steep side slopes.
6. Do not stop until clear of loose sand.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Driving In Cold Weather

NOTE

Metal parts of drive train may become brittle from the cold.

1. After engine and transmission have warmed up, place transmission gear selector in DRIVE (D), manually select FIRST gear, and move vehicle very slowly. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation. Use two-wheel drive if traction permits.
2. Drive in FIRST gear at about 5 mph (8 kph) for about 100 yards to warm up transfer case, differentials, and wheel hubs. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.
3. Engage four-wheel drive, if required. Refer to WP 0017, Operation Under Usual Conditions - Four-Wheel Drive Operation.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Driving In Deep Snow

WARNING

Snow-covered slopes may sometimes be climbed with only moderate acceleration. Over-acceleration may cause wheels to spin and dig deeper which may cause loss of vehicle control or vehicle to “bounce” . Steer vehicle straight as possible until over hill. Steering to left or right may cause vehicle to skid sideways or possible overturn. Failure to comply may result in serious injury or death to personnel and damage to equipment.

CAUTION

Operator should take every precaution to prevent snow from blowing into engine when parked. Snow may melt and form ice that could disable engine control. Failure to comply may result in damage to equipment

NOTE

Step 1 is performed if required.

1. Use four-wheel drive, downshift transmission, and adjust tire pressure as required. Refer to WP 0017, Operation Under Usual Conditions - Four-Wheel Drive Operation, WP 0016, Operation Under Usual Conditions - Transmission Operation, or WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.
2. Avoid sudden turning, braking, or acceleration. Keep vehicle moving and follow a straight and steady course. Turns should be gradual momentum.
3. If vehicle is stopped by deep snow or mud do not spin wheels, it will only dig vehicle deeper into snow or mud. If possible, back up and find another route to follow.
4. If tires start to spin, remove pressure from accelerator pedal momentarily and then slowly apply pressure to accelerator pedal to gain traction.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Parking In Extreme Cold

WARNING

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in injury to personnel and/or damage to equipment.

1. Park vehicle so it does not face into the wind, if possible. Refer to WP 0104, Vehicle Parking.
2. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
3. Clean snow off vehicle body.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - EXTREME COLD STARTING (BELOW 32°F [0°C])

INITIAL SETUP:

References
WP 0019
WP 0077

Equipment Condition
Engine shutdown (WP 0013)
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)

UNUSUAL ENVIRONMENT/WEATHER

Engine Start

WARNING

Be alert at all times for the smell of fuel. Hot engine and components can ignite fuel. If fuel smell is detected while operating vehicle, shut down vehicle immediately. Failure to comply may result in damage to equipment and serious injury or death to personnel.

CAUTION

Do not apply pressure to accelerator pedal before attempting to start engine. This will make the engine harder to start and may result in a no-start condition. Failure to comply may result in damage to equipment.

NOTE

Vehicle has an electronically controlled engine. When idling in cold weather, the engine may automatically increase idle rpm to maintain a safe engine operating temperature. Increase in idle rpm in cold weather is normal. In cold conditions if the intake air temperature is below 32°F (0°C) and after 5 minutes of engine idling, engine idle speed will automatically increase or decrease in rpm (because of software in the Engine Control Module [ECM]) to maintain a coolant temperature between 149°F (65°C) and 160°F (71°C).

Fuel fired heater may also be used during, or programmed to come on before, cold weather starts. Refer to WP 0019, Operation Under Usual Conditions - Fuel Fired Heater.

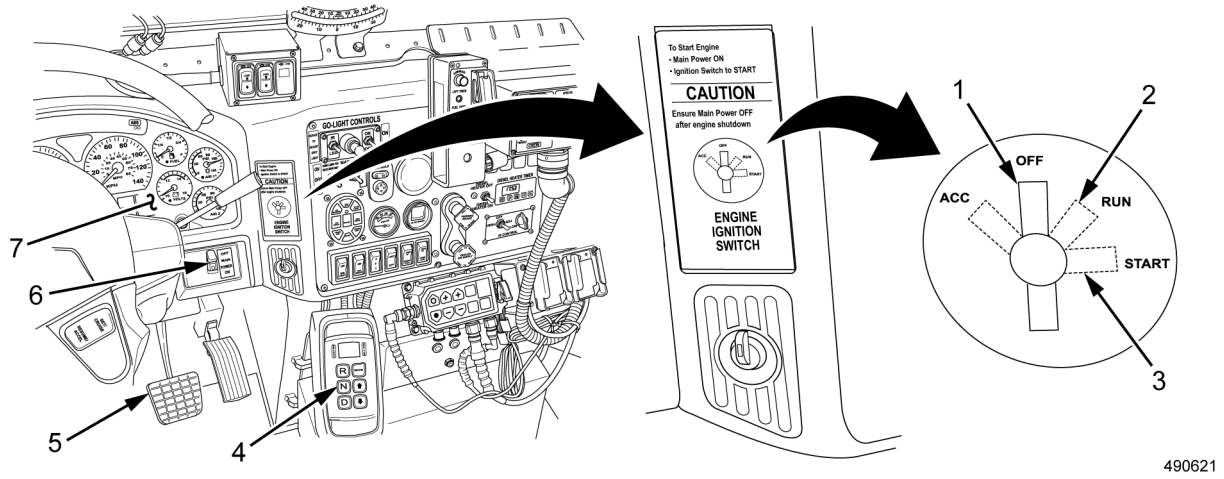


Figure 1. IP.

1. Turn on fuel fired heater. Refer to WP 0019, Operation Under Usual Conditions - Fuel Fired Heater.
2. Apply service brake (Figure 1, Item 5).

NOTE

When ignition switch is set to ON, electrical Built-in-Test (BIT) will run, and is complete when gauges and indicators on Instrument Panel (IP) cluster illuminate, sweep right, sweep left, and darken

When ignition switch is set to RUN, Anti-lock Brake System (ABS) indicator will illuminate for five to six seconds to show BIT is being performed.

Air Brake BIT is complete when ABS sensors complete cycling. Cycling can be heard as eight busts of air or clicks.

3. While watching IP cluster (Figure 1, Item 7), turn MAIN POWER switch (Figure 1, Item 6) ON. Wait for gauges on IP cluster to complete BIT.
4. Turn ignition switch (Figure 1, Item 1) to RUN (Figure 1, Item 2) and wait for air brake system to perform BIT.

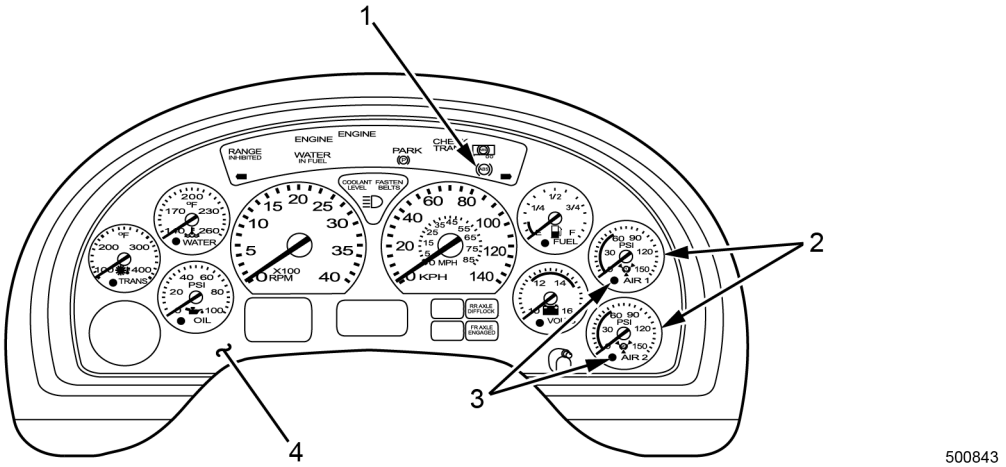


Figure 2. IP Cluster.

5. Verify that ABS indicator (Figure 2, Item 1) illuminates for 5 to 6 seconds when ignition switch (Figure 1, Item 1) is turned to RUN (Figure 1, Item 2), then turns off.
6. Verify transmission is in NEUTRAL (N) on transmission gear selector (Figure 1, Item 4).

CAUTION

To avoid engine damage, if engine fails to start after 30 seconds, release ignition switch and wait 2 to 3 minutes to allow starter motor to cool.

7. Turn and hold ignition switch (Figure 1, Item 1) to START (Figure 1, Item 3) until engine starts, but for no longer than 30 seconds.
8. Release ignition switch (Figure 1, Item 1) as soon as engine starts. Engine will continue to run with ignition switch in RUN (Figure 1, Item 2).

NOTE

Turning the ignition switch to OFF disengages the engine restart interlock, which may prevent the ignition switch from turning to start. Step 9 is performed if engine does not start.

9. Turn ignition switch (Figure 1, Item 1) to OFF.
10. Turn ignition switch (Figure 1, Item 1) to RUN (Figure 1, Item 2).
11. Repeat steps 7 through 9 no more than three times if engine doesn't start. After three attempts, perform WP 0077, Engine System Troubleshooting Procedures.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Engine Warm-Up

NOTE

An audible alarm will sound when SER. DRIVE and ENTER are selected on Master Vehicle Light Switch (MVLS) until air system pressure reaches 70 psi (483 kPa).

1. Check both AIR pressure gauges (Figure 2, Item 2) on IP cluster (Figure 2, Item 4) during startup and idle. AIR pressure gauge RED indicator lights (Figure 2, Item 3) will illuminate when starting engine. As air pressure reaches 70 psi (483 kPa), AIR pressure gauge RED indicator lights will go out.

CAUTION

Prolonged idling of the engine at low idle can reduce performance. Once engine oil pressure has reached 31 psi (214 kPa), use throttle control system to increase engine idle if the vehicle is stationary for more than 2 minutes. Failure to comply may result in damage to equipment.

2. Idle engine to allow air system pressure to build until both AIR pressure gauges (Figure 2, Item 2) on IP cluster (Figure 2, Item 4) reach normal operating range of 110 to 130 psi (758–896 kPa).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - OPERATING VEHICLE IN EXTREME COLD (BELOW 32°F [0°C])

INITIAL SETUP:

Materials/Parts
Plugs, ear (WP 0110, Item 24)

References
WP 0004
WP 0013
WP 0016
WP 0048
WP 0077
WP 0104
TB-MED 508

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

UNUSUAL ENVIRONMENT/WEATHER

WARNING

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Driver must visually check to make sure all areas of vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury and/or death to personnel.

Do not fill fuel tank with engine running. Do not overfill fuel tank. Clean fuel spills immediately according to standard operating procedures. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoid side slopes whenever possible. Failure to comply may cause vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

The driver's field of view is limited. Ensure that mirrors are positioned so as to allow for a maximum range of vision prior to vehicle operation. Ground guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of vehicle and remain within view of driver. Failure to comply may lead to a vehicle collision/accident resulting in injury or death to personnel and/or damage to equipment.

Noise levels exceed 85-decibel limit. Exposure to constant, elevated noise levels could cause permanent hearing damage. Single hearing protection is required in and around operating vehicle. Double hearing protection is required during weapons firing. Failure to comply may result to injury to personnel.

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the Central Tire Inflation System (CTIS) Driver Display Module (DDM) can help identify a tire problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment.

In extreme temperature environments, follow work-rest schedules as well as the guidance of TB-MED 508, Prevention and Management of Cold-Weather Injuries. Failure to comply may result in injury to personnel.

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in injury to personnel and/or damage to equipment.

Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel.

Do not use cruise control system in heavy traffic or on roads that are winding, snow or ice covered, or have a slippery or loose surface. Unpredictable driving conditions may cause wheel slippage and loss of vehicle control. Failure to comply may result in serious injury or death to personnel.

CAUTION

Temperatures may change as much as 70°F (21°C) between day and night. Due to expansion and contraction of all fluids, use care when filling fuel tank and fluid reservoirs to prevent overflow when temperatures change. (Filling tank full of cold fuel may cause fuel tank to overflow when fuel expands as fuel heats up.) Failure to comply may result in damage to equipment.

The engine oil pressure has three monitoring systems: RED indicator light on OIL PSI gauge, RED ENGINE light, and OIL PSI gauge. If any two of the three systems indicate a problem, park vehicle, shut down engine, and notify Field Level Maintenance. If only one system indicates a problem and the other two are operating normally, proceed with your mission and notify Field Level Maintenance upon completion. Failure to comply may result in damage to equipment.

The engine coolant temperature has three monitoring systems: WATER temperature gauge RED indicator light, RED ENGINE light, and WATER temperature gauge. If any two of the three indicate a problem, park vehicle and allow engine to idle until water temperature cools down. If water temperature does not go down, shut down engine and notify Field Level Maintenance. Failure to comply may result in damage to equipment.

Moisture and dirt in filter elements will plug filters and cause engine damage. Monitor air cleaner gauge when operating vehicle in mud, sand, or snow. If AIR FILTER RESTRICTION gauge indicates a problem, notify Field Level Maintenance.

In cold weather, do not start driving immediately after starting engine. The engine, cooling system, and transmission must warm up. The transmission will only operate in NEUTRAL (N), REVERSE (R), and third gears when transmission fluid temperature is below 19°F (-7°C). Above 19°F (-7°C), transmission will operate in all ranges. In cold weather, if OIL PSI Gauge does not show appropriate oil pressure reading within 10 to 15 seconds after starting engine, shut down immediately and refer to WP 0077, Engine Systems Troubleshooting Procedures. Lack of lubrication may damage engine. Ensure OIL PSI Gauge is in safe range during idle and increases as engine speed increases. Failure to comply may result in damage to equipment.

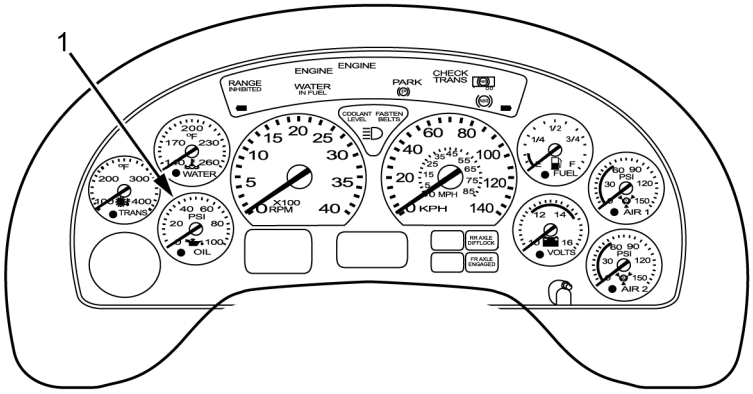


Figure 1. Oil PSI Gauge.

1. Verify OIL PSI gauge (Figure 1, Item 1) is above 40 psi (276 kPa) during idle and increases as engine speed increases.
2. Run engine until it idles smoothly.

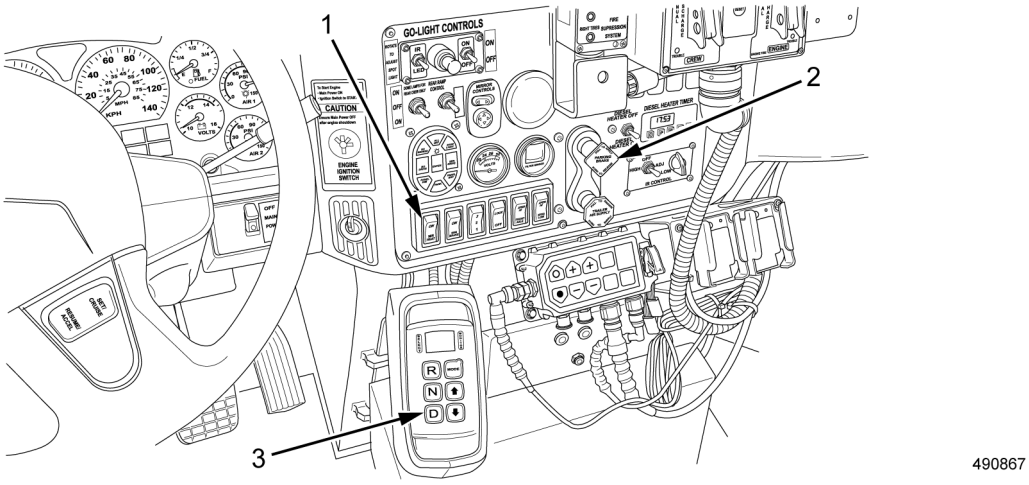


Figure 2. MIR HEAT Switch.

NOTE

MIR HEAT switch activates heating of mirrors and front transparent armor.

When MIR HEAT switch is turned ON, defrost cycle will run for 60 minutes before shutting off because it is on a 60-minute timer program.

3. Push MIR HEAT switch (Figure 2, Item 1) ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
4. Increase engine speed to 1200 to 1500 rpm for another 25 minutes. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.
5. Shift transmission to DRIVE (D) (Figure 2, Item 3). Refer to WP 0016, Operation Under Unusual Conditions - Transmission Operation.

6. Release parking brake (Figure 2, Item 2). Refer to WP 0004, Description and Use of Operator Controls and Indicators.
7. Slowly drive vehicle three to five miles to warm up drivetrain components, tires, and brakes.

CAUTION

Driver must take every precaution to prevent snow from blowing into engine when parked. Snow will melt and later form ice that can jam engine controls.

8. Park vehicle. Refer to WP 0104, Vehicle Parking.

CAUTION

The engine must be kept running until engine coolant temperature reaches a minimum of 160°F (71°C) prior to shutting engine off. Depending on environmental conditions, it could take up to 45 minutes for coolant temperatures to reach 160°F (71°C). Failure to comply may result in damage to equipment.

9. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - TIRE CHAIN INSTALLATION AND REMOVAL

INITIAL SETUP:

Materials/Parts
Plugs, ear (WP 0110, Item 24)

Personnel Required
Crewmember - (2)

References
WP 0011
WP 0012
WP 0013
WP 0045
TB-MED 508

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

UNUSUAL ENVIRONMENT/WEATHER

Tire Chain Installation

WARNING

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Drivers must visually check to make sure all areas of the vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury and/or death to personnel.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoid side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

The driver's field of view is limited. Ensure that the mirrors are positioned so as to allow for a maximum range of vision prior to vehicle operation. Ground guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of the vehicle and remain within view of the driver. Failure to comply may lead to a vehicle collision/accident resulting in injury or death to personnel and/or damage to equipment.

Noise levels exceed 85-decibel limit. Exposure to constant, elevated noise levels could cause permanent hearing damage. Single hearing protection is required in and around operating vehicle. Double hearing protection is required during weapons firing. Failure to comply may result to injury to personnel.

Ensure tire pressures are properly maintained for normal operations unless or until road/terrain conditions require adjusted pressures. Incorrect or low air pressure can result in tire failures and could lead to an accident. Failure to comply may result in serious injury or death to personnel and damage to equipment.

In extreme temperature environments, follow work-rest schedules as well as the guidance of TB-MED 508, Prevention and Management of Cold-Weather Injuries. Failure to comply may result in injury to personnel.

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in injury to personnel and/or damage to equipment.

CAUTION

Do not install tire chains on vehicles that have not received Snowchain Bumpstop Kit. Contact Field Level Maintenance for Snowchain Bumpstop Kit installation. Failure to comply may result in damage to vehicle.

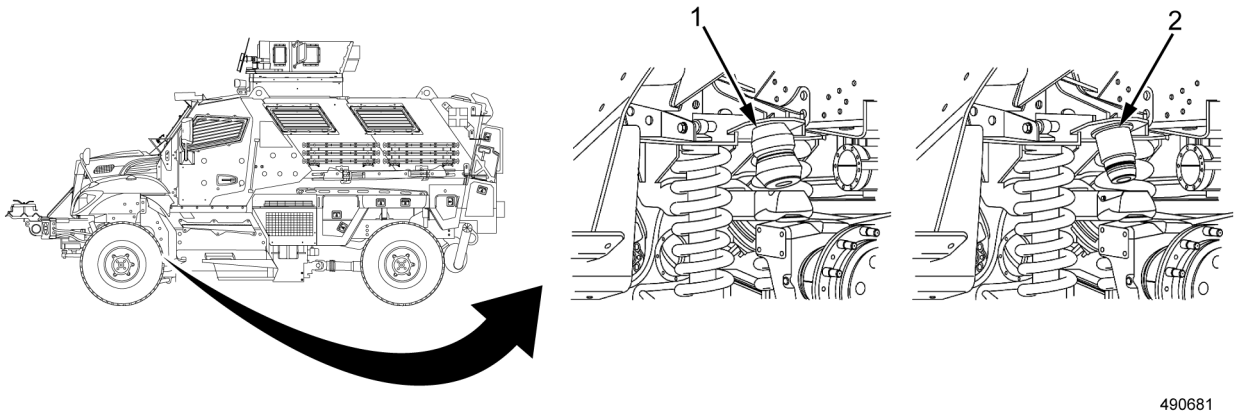


Figure 1. Snowchain Bumpstop Kit Identification.

NOTE

Wheel and tire removed from figure for clarity.

Driver side bumpstops shown; commander side similar.

1. Verify Snowchain Bumpstop Kit is installed at all four bumpstop locations.
   a. If bumpstops (Figure 1, Item 1) are installed, Snowchain Bumpstop Kit has not been installed. Notify Field Level Maintenance to install Snowchain Bumpstop Kit.
   b. If Snowchain bumpstops (Figure 1, Item 2) are installed, Snowchain Bumpstop Kit has been installed. Proceed to step 2.

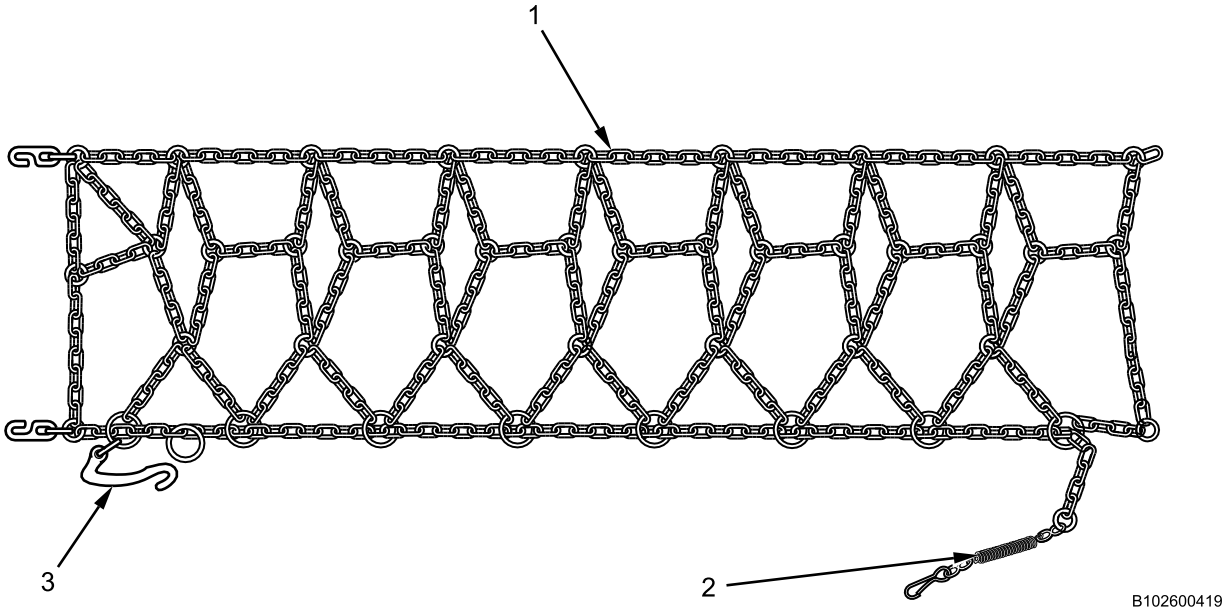


Figure 2. Tire Chain.

2. Spread tire chain (Figure 2, Item 1) out flat in front of tire (not shown) and ensure all tire chain links are straight.
3. Arrange tire chain (Figure 2, Item 1) so tension lever (Figure 2, Item 3) and tension spring (Figure 2, Item 2) are positioned outward away from vehicle.

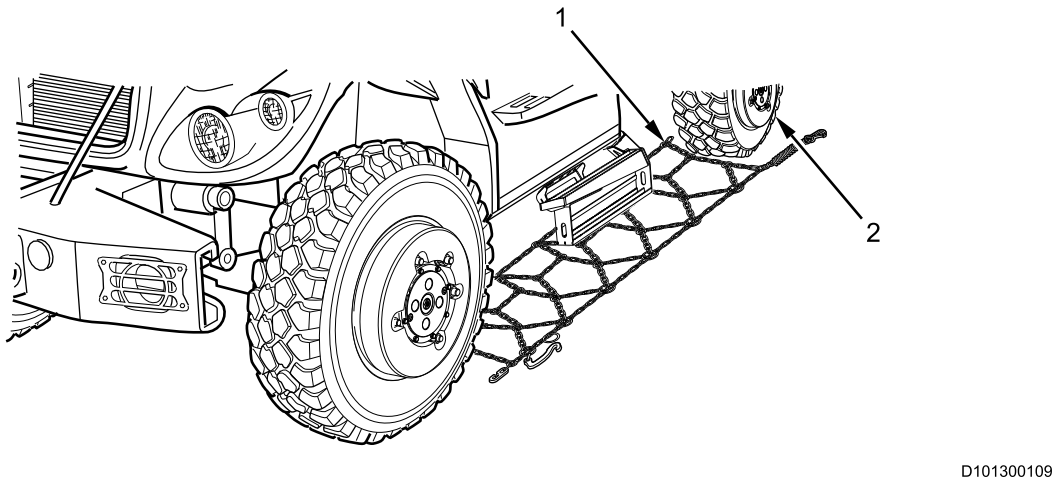


Figure 3. Driver Rear Tire Chain Installation.

NOTE

Driver rear tire shown; others similar.

4. Apply service brake. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.
5. Release parking brake. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.
6. Place transmission gear selector in DRIVE (D). Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.

7. With assistant to watch tire chain (Figure 3, Item 1), drive rear tire (Figure 3, Item 2) slowly forward onto tire chain.
8. Apply service brake to halt vehicle approximately 1/4 of wheel rotation onto tire chain (Figure 3, Item 1).
9. Place transmission gear selector in NEUTRAL (N); set parking brake; and shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
10. Pull front of tire chain (Figure 3, Item 1) over top of tire (Figure 3, Item 2).

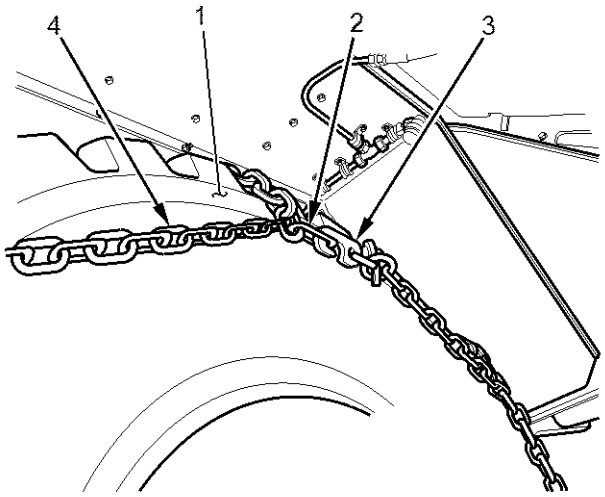


Figure 4. Inboard Side of Tire.

CAUTION

Ensure chain links are not twisted during connection. Failure to comply may result in damage to tire chain and/or vehicle.

11. Connect side chain (Figure 4, Item 4) on inboard side of tire (Figure 4, Item 1) by attaching side chain end ring (Figure 4, Item 2) on closing hook (Figure 4, Item 3).

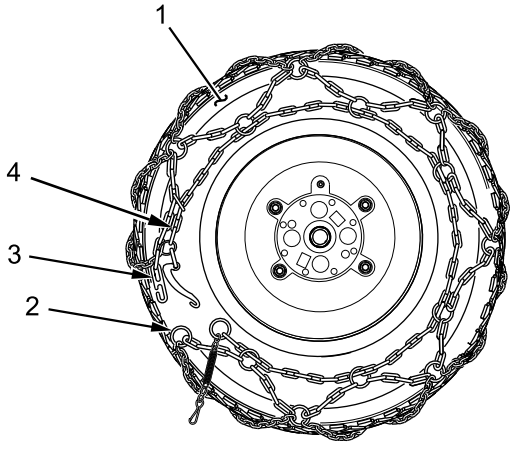
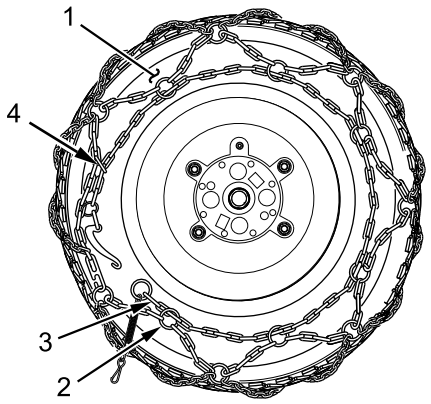


Figure 5. Outboard Side of Tire.

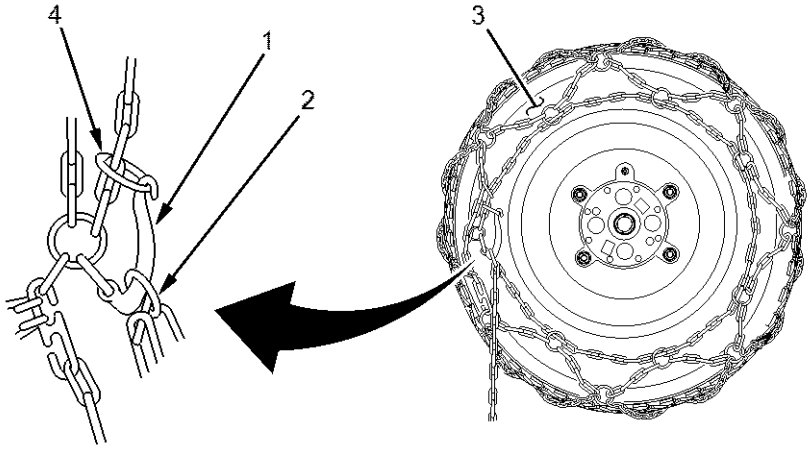
12. Connect side chain (Figure 5, Item 4) on outboard side of tire (Figure 5, Item 1) by attaching side chain end ring (Figure 5, Item 2) on closing hook (Figure 5, Item 3).



P102600297

Figure 6. Side Tire Chain Installation.

13. Remove slack from tire chain (Figure 6, Item 4) on outboard side of tire (Figure 6, Item 1) by pulling excess tension chain (Figure 6, Item 3) through side chain end ring (Figure 6, Item 2).



545202

Figure 7. Tire Chain Tension.

14. Insert tension lever (Figure 7, Item 1) into next tension chain link (Figure 7, Item 2) on outboard side of tire (Figure 7, Item 3).
15. Close tension lever (Figure 7, Item 1), and align flat spot of lock ring (Figure 7, Item 4) with end of tension lever.
16. Slip lock ring (Figure 7, Item 4) over end of tension lever (Figure 7, Item 1).
17. Turn lock ring (Figure 7, Item 4) to secure on tension lever (Figure 7, Item 1).

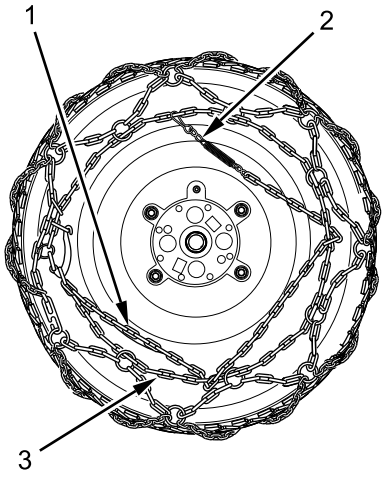
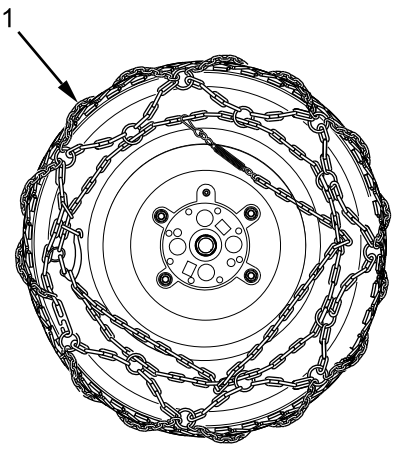


Figure 8. Excess Tension Chain.

18. Loop excess tension chain (Figure 8, Item 1) around outboard side chain (Figure 8, Item 3) and secure with tension spring clip (Figure 8, Item 2).
19. Repeat steps 2 thought 18 for remaining tires.



P102600363

Figure 9. Tire Chain Installation.

CAUTION

Slack or loose tire chains can strike and damage Central Tire Inflation System (CTIS) components or Fire Suppression System (FSS) tubes and nozzles. Frequently check and adjust tire chain tension during operations. Failure to comply may result in damage to equipment.

NOTE

Uniform chain tension should be maintained around tire surface. If adjustment is required, repeat steps 15 through 18.

20. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C) or WP 0045, Operation Under Unusual Conditions - Extreme Cold Starting (Below 32°F [0°C]).
21. Drive vehicle 500 ft (152 m). Check tire chain (Figure 9, Item 1) for obvious looseness and slack. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Tire Chain Removal

NOTE

After using tire chains, dry before storing. Mud- and dirt-covered tire chains should be rinsed in hot water and then completely dried. Driver rear tire shown, others similar.

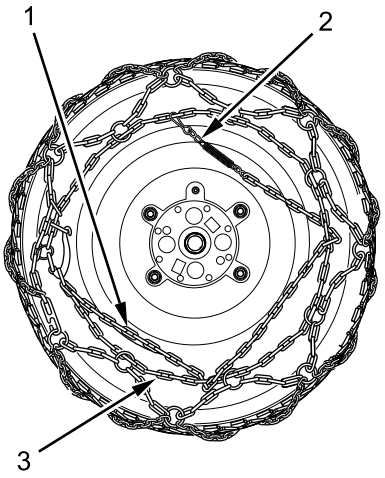


Figure 10. Excess Tension Chain.

1. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
2. Unhook tension spring clip (Figure 10, Item 2) and remove looped excess chain (Figure 10, Item 1) from around outboard side chain (Figure 10, Item 3).

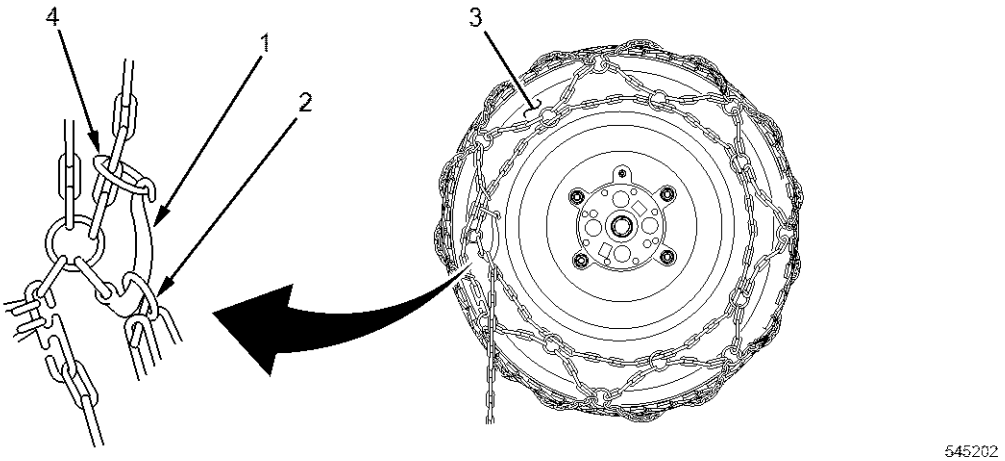
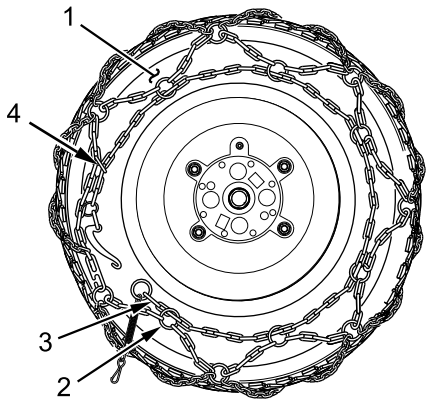


Figure 11. Tire Chain Tension.

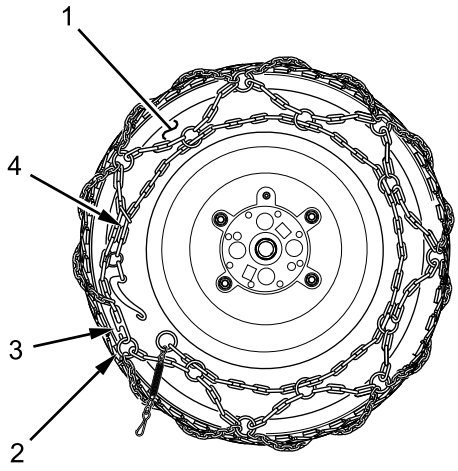
3. Turn lock ring (Figure 11, Item 4) to align flat spot with end of tension lever (Figure 11, Item 1).
4. Unhook lock ring (Figure 11, Item 4) from end of tension lever (Figure 11, Item 1) and open tension lever.
5. Remove tension lever (Figure 11, Item 1) from tension link chain (Figure 11, Item 2) on outboard side of tire (Figure 11, Item 3).



P102600297

Figure 12. Side Tire Chain Removal.

6. Pull excess tension chain (Figure 12, Item 3) through side chain end ring (Figure 12, Item 2) on tire chain (Figure 12, Item 4) on outboard side of tire (Figure 12, Item 1).



P102600355

Figure 13. Outboard Side of Tire.

7. Disconnect side chain (Figure 13, Item 4) on outboard side of tire (Figure 13, Item 1) by removing side chain end ring (Figure 13, Item 2) from closing hook (Figure 13, Item 3).

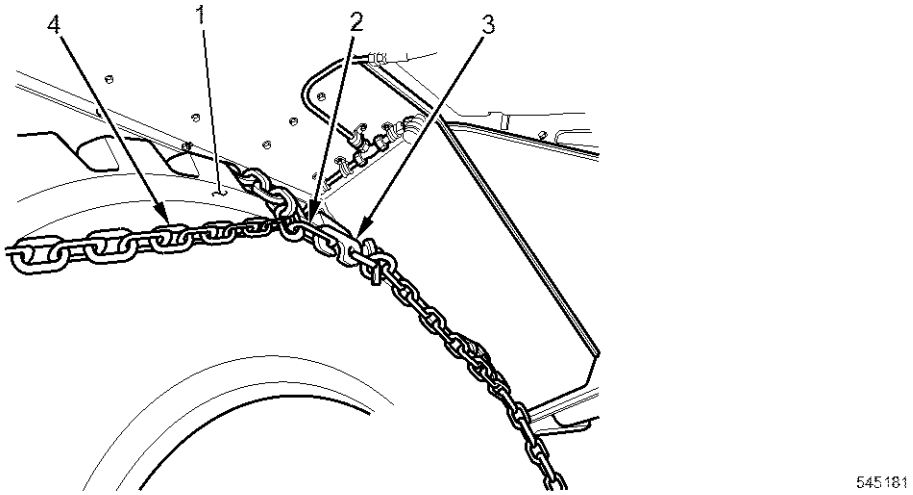
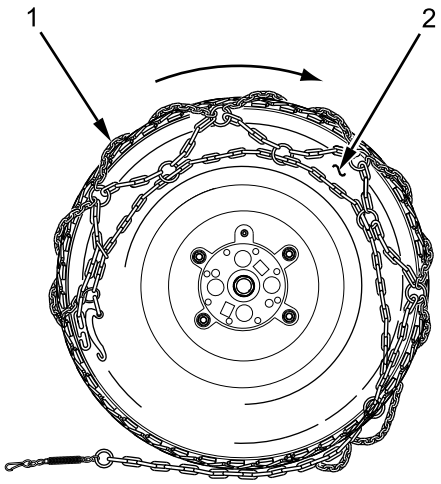


Figure 14. Inboard Side of Tire.

8. Disconnect side chain (Figure 14, Item 4) on inboard side of tire (Figure 14, Item 1) by unhooking side chain end ring (Figure 14, Item 2) from closing hook (Figure 14, Item 3).
9. Repeat steps 2 through 8 for remaining tires.



B102600411

Figure 15. Commander Rear Tire Chain Removal.

CAUTION

Ensure that the tire chain does not fall off the tire and collapse into a pile in front of or behind the rolling tire. If the tire rolls over the tire chain, damage to the tire chain could result.

10. Lay tire chain (Figure 15, Item 1) flat on either side of tire (Figure 15, Item 2).
11. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C) or WP 0045, Operation Under Unusual Conditions - Extreme Cold Starting (Below 32°F [0°C]).
12. Release parking brake. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.
13. Drive forward or backward. Have assistant guide tire chain (Figure 15, Item 1) off tire (Figure 15, Item 2).
14. Once tire chain (Figure 15, Item 1) is free of tire (Figure 15, Item 2), have assistant remove tire chain from vehicle travel area.
15. Repeat steps 10 through 14 on remaining tires.
16. Contact Field Level Maintenance for Snowchain Bumpstop Kit removal.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - THROTTLE IDLE CONTROL

INITIAL SETUP:

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Parking brake set (WP 0013)
Engine started (WP 0011)

UNUSUAL ENVIRONMENT/WEATHER

CAUTION

Prolonged idling of the engine at low idle can reduce performance. Use throttle control system to increase engine idle if the vehicle is stationary for more than two minutes. Failure to comply may result in damage to equipment.

NOTE

If transmission is shifted from NEUTRAL (N), or trailer brake hand control is engaged while using switches, idle rpm will drop to normal parameters.

CRUISE/THROTTLE switch activates and deactivates the cruise control and throttle control system. SET/CRUISE, RESUME/ACCEL switch set and controls vehicle speed when cruise control and throttle control system is activated. If CRUISE/THROTTLE switch is OFF, RESUME/ACCEL has no effect on vehicle or throttle speed.

Throttle Idle Control

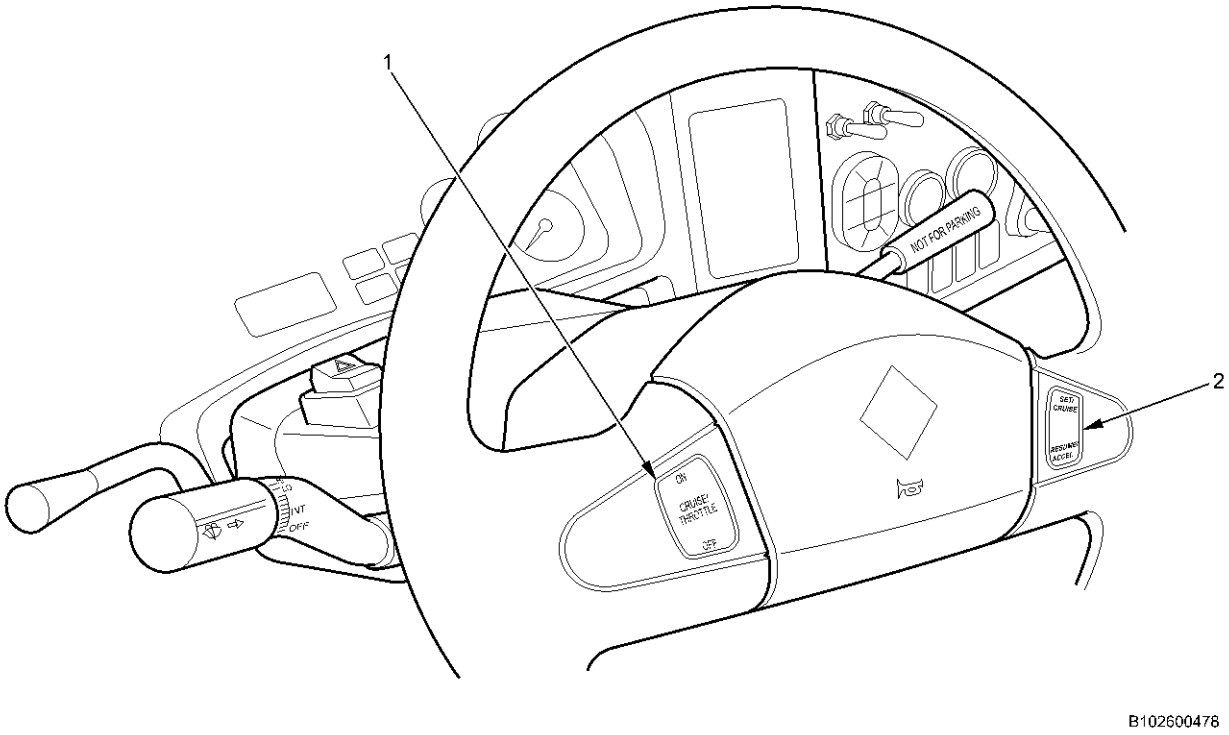


Figure 1. Throttle Idle Control Switches.

1. Push CRUISE/THROTTLE switch (Figure 1, Item 1) ON.
2. Push and hold RESUME/ACCEL on the SET/CRUISE, RESUME/ACCEL switch (Figure 1, Item 2) to increase engine rpm.
3. Push and hold SET/CRUISE on the SET/CRUISE, RESUME/ACCEL switch (Figure 1, Item 2) to decrease engine rpm.

NOTE

Applying the service brake temporarily deactivates the throttle control system, but the previously set rpm remains in system memory until the CRUISE/THROTTLE switch is pushed OFF.

4. Push RESUME/ACCEL on the SET/CRUISE, RESUME/ACCEL switch (Figure 1, Item 2) to return to previously set rpm.
5. Push CRUISE/THROTTLE switch (Figure 1, Item 1) OFF to deactivate the system and clear system memory of previously set rpm.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - NIGHT VISION OPERATION

INITIAL SETUP:

References
WP 0011

UNUSUAL ENVIRONMENT/WEATHER

Infrared (IR) Spotlight Operation

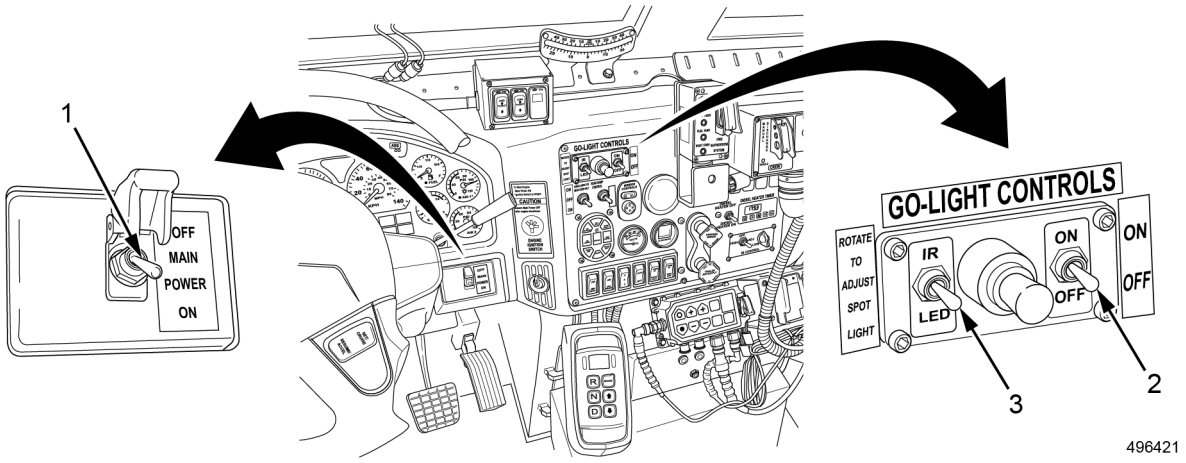


Figure 1. Spotlight IR Operation.

1. Turn MAIN POWER switch (Figure 1, Item 1) ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
2. Move GO-LIGHT CONTROLS spotlight Infrared (IR)/LED switch (Figure 1, Item 3) up to turn spotlight to IR mode.
3. Move GO-LIGHT CONTROLS spotlight ON/OFF switch (Figure 1, Item 2) up to turn spotlight ON.

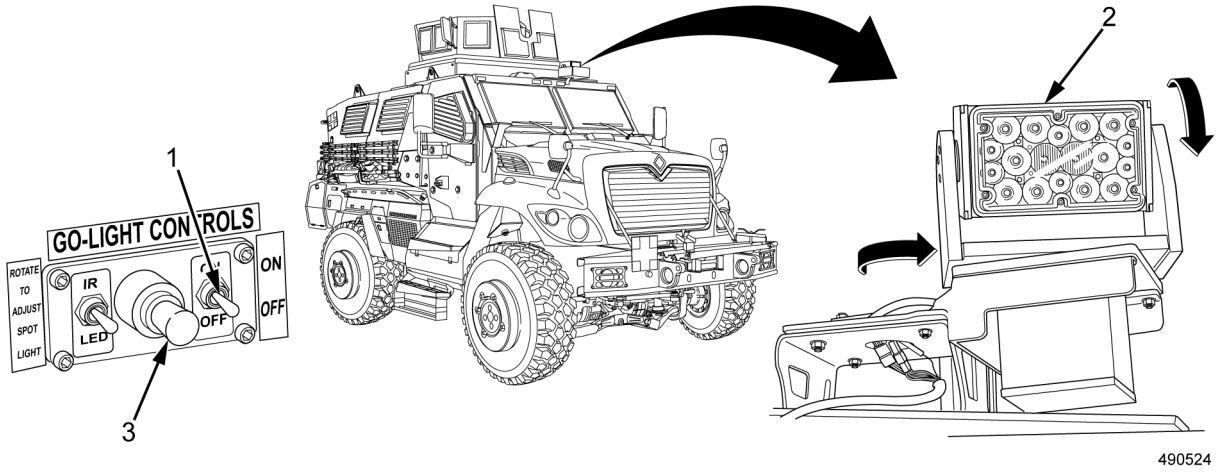


Figure 2. Spotlight Rotation.

4. Use GO-LIGHT CONTROLS joystick (Figure 2, Item 3) to rotate spotlight (Figure 2, Item 2).
5. Move GO-LIGHT CONTROLS spotlight ON/OFF switch (Figure 2, Item 1) down to turn spotlight (Figure 2, Item 2) OFF.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

B.O. Running Lights

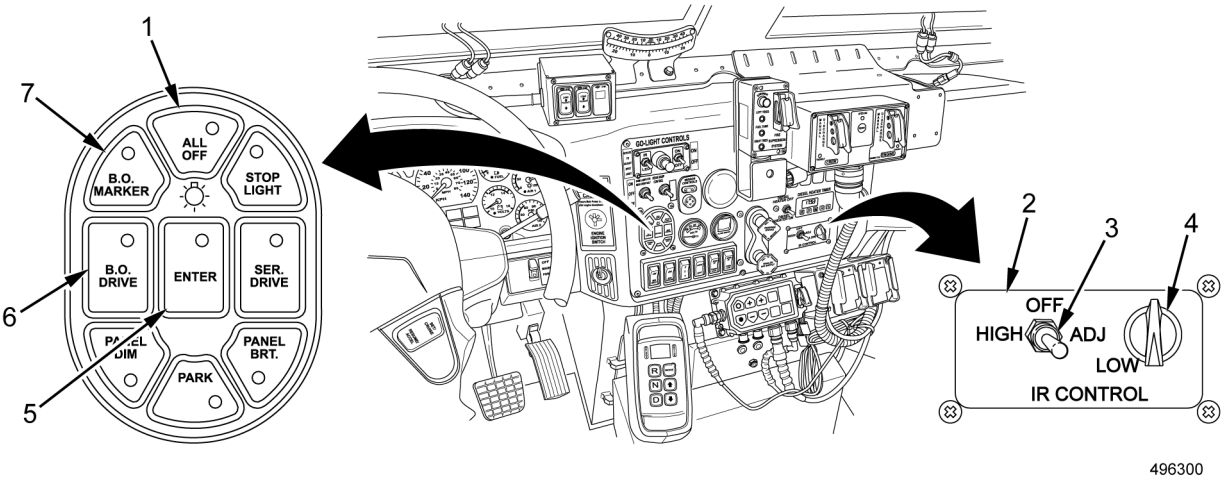


Figure 3. B.O. MARKER, B.O. DRIVE, and IR Control Operation.

NOTE

B.O. Markers will only illuminate if MAIN POWER switch is ON.

1. Press B.O. MARKER on Master Vehicle Light Switch (MVLS) (Figure 3, Item 7) and ENTER (Figure 3, Item 5) to set front and rear blackout marker lamps on. In this mode, B.O. brake lamps will also function.
2. Press B.O. DRIVE on MVLS (Figure 3, Item 6) and ENTER (Figure 3, Item 5) to set all four blackout marker lamps to come on along with the B.O. DRIVE light. B.O. brake lamps will also function.

3. Press ALL OFF (Figure 3, Item 1) and ENTER (Figure 3, Item 5) to deactivate all lights.
4. Move toggle switch (Figure 3, Item 3) on IR CONTROL panel (Figure 3, Item 2) to HIGH for highest IR intensity.
5. Move toggle switch (Figure 3, Item 3) on IR CONTROL panel (Figure 3, Item 2) to ADJ for adjusting IR intensity using knob (Figure 3, Item 4).
6. Move toggle switch (Figure 3, Item 3) to OFF to turn IR CONTROL panel (Figure 3, Item 2) OFF.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - FORDING

INITIAL SETUP:

References
WP 0005
WP 0012
WP 0016
WP 0017
WP 0027
WP 0062
WP 0089

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

FORDING AND SWIMMING

Prior To Fording

1. Unlock combat doors. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.
2. Check door handle operation. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.
3. Unlock gunner hatch. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.
4. Open emergency hatch. Refer to WP 0062, Emergency Operation - Emergency Hatch (Roof).
5. Verify water depth does not exceed allowed vehicle water fording depth 36 in (91 cm).

END OF TASK

FORDING AND SWIMMING

Fording

WARNING

Do not attempt to ford water deeper than 36 inches (91 cm), including wave height. Ensure bottom surface under water is firm. Reduce speed to 5 mph (8 kph) or less during fording. Unless absolutely necessary, do not stop while driving in the water. Ensure brakes are dry and operating correctly after fording before commencing normal driving. Failure to comply may result in injury to personnel and/or damage to equipment.

CAUTION

Ensure brake components are cool before entering water. Hot brake components can become damaged when submerged in water. Failure to comply may result in damage to vehicle brake system.

Avoid spinning wheels to avoid causing a rut for following vehicles. Failure to comply may result in damage to equipment.

1. Stop vehicle at edge of water before fording, if conditions permit.

CAUTION

If engine stops while fording, immediately attempt to restart engine. Failure to comply may result in damage to equipment.

2. Engage four-wheel drive. Refer to WP 0017, Operation Under Usual Conditions - Four-Wheel Drive Operation.
3. Approach water slowly, to avoid wake which can cause water to enter engine intake system.
4. Maintain a constant speed of 5 mph (8 kph) or less.
5. If vehicle accidentally enters water deeper than 36 in. (91 cm), perform the following steps:
   a. Apply service brake pedal to stop vehicle.
   b. Place transmission gear selector in REVERSE (R). Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
   c. Release service brake pedal.
   d. Press down slowly on accelerator pedal.
   e. Slowly back vehicle out of water.
6. Exit water slowly and perpendicular to the bank.
7. Dry out brake components by driving vehicle for about 500 ft (153 m) while lightly pressing and holding service brake pedal 5 to 10 seconds and lightly applying the accelerator (this will cause a slight drag to dry the brake pads). Repeat two to three times to dry brakes.
8. If adequate braking is not restored by drying brakes, notify Field Level Maintenance.

END OF TASK

FORDING AND SWIMMING

After Fording

1. When clear of fording area, stop vehicle.
2. Remove water and clean deposits from all areas of vehicle as soon as possible. Refer to WP 0089, Vehicle Cleaning.
3. Shift transmission to appropriate gear and continue mission. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.
4. If water entered the interior of the vehicle, notify Field Level Maintenance as soon as possible to ensure water is drained properly from hull.
5. If vehicle came in contact with saltwater, wash vehicle with fresh water as soon as possible to minimize possible corrosion. Refer to WP 0089, Vehicle Cleaning.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - STEEP GRADES (ASCENDING)

INITIAL SETUP:

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)
Parking brake released (WP 0012)

UNUSUAL ENVIRONMENT/WEATHER

WARNING

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Driver must visually check to make sure all areas of vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury or death to personnel.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoid side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

The driver's field of view is limited. Ensure that the mirrors are positioned so as to allow for a maximum range of vision prior to vehicle operation. Ground guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of the vehicle and remain within view of the driver. Failure to comply may lead to a vehicle collision/accident resulting in injury or death to personnel and/or damage to equipment.

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the Central Tire Inflation System (CTIS) Driver Display Module (DDM) can help identify a tire problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in injury to personnel and/or damage to equipment.

Always ascend hills with extreme care and approach slopes head on. Do not shift into a lower gear than is necessary to maintain momentum. Attempt to maintain a constant engine speed and do not come to a complete stop while ascending hill. Use good judgment. If hill appears too steep to climb, do not attempt. Failure to comply may result in vehicle rollover or rollback, causing serious injury or death to personnel and/or damage to equipment.

Ensure transfer case is in XFER LO and place AXLE switch in ON position before ascending grade. Stop vehicle before beginning ascent. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

CAUTION

The engine oil pressure has three monitoring systems: RED indicator light on OIL PSI gauge, RED ENGINE light, and OIL PSI gauge. If any two of the three systems indicate a problem, park vehicle, shut down engine, and notify Field Level Maintenance. If only one system indicates a problem and the other two are operating normally, proceed with your mission and notify Field Level Maintenance upon completion. Failure to comply may result in damage to equipment.

The engine coolant temperature has three monitoring systems: WATER temperature gauge RED indicator light, RED ENGINE light, and WATER temperature gauge. If any two of the three indicate a problem, park vehicle and allow engine to idle until water temperature cools down. If water temperature does not go down, shut down engine and notify Field Level Maintenance. Failure to comply may result in damage to equipment.

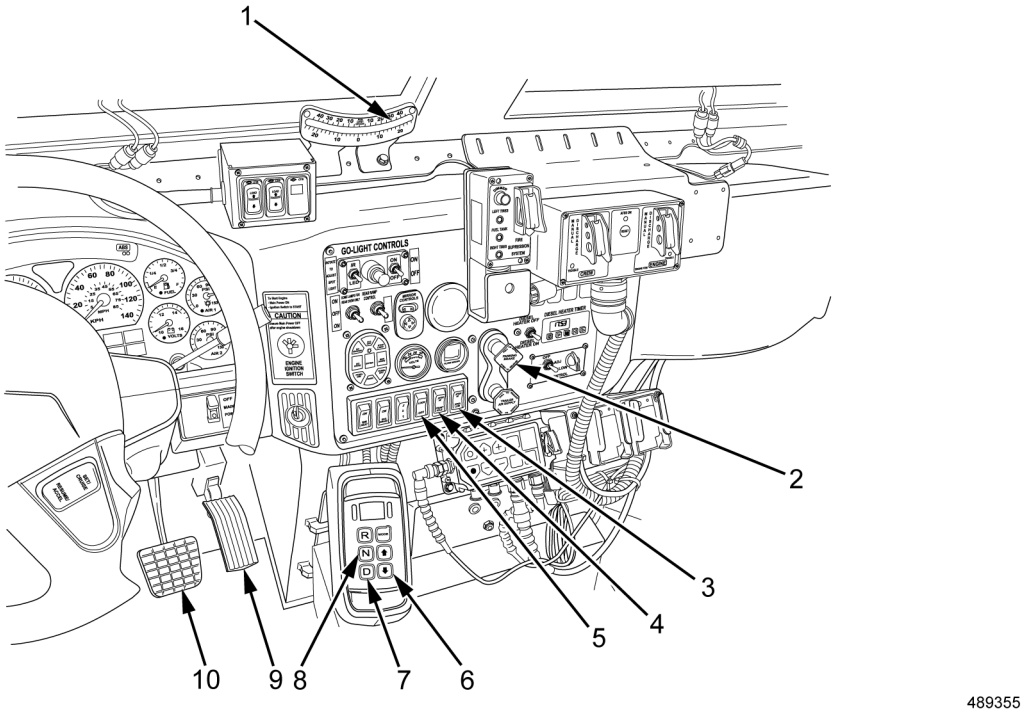


Figure 1. Ascent Controls.

1. Apply service brake (Figure 1, Item 10) to stop vehicle prior to ascent.
2. Pull YELLOW parking brake knob (Figure 1, Item 2) OUT to engage parking brake.
3. Place transmission gear selector in NEUTRAL (N) (Figure 1, Item 8).
4. Push FRONT AXLE switch (Figure 1, Item 4) ON.
5. Push XFER LO on XFER switch (Figure 1, Item 3).
6. Push LOCK on DIFF LOCK switch (Figure 1, Item 5).
7. Place transmission gear selector in DRIVE (D) (Figure 1, Item 7).
8. Select SECOND (2) or FIRST (1) gear using transmission gear selector DOWN arrow (Figure 1, Item 6), depending on length and grade of slope.
9. Push YELLOW parking brake knob (Figure 1, Item 2) IN to release parking brake.
10. Release service brake (Figure 1, Item 10).
11. Maintain slow, steady speed going uphill by applying steady pressure on accelerator pedal (Figure 1, Item 9). If vehicle starts to slow, increase accelerator pressure steadily; do not come to complete stop. If wheels start to slip and vehicle is close to top of hill, “walk” vehicle remaining distance by turning front wheels sharply left and right if situation permits. This action will provide fresh traction into the surface and will usually result in enough traction to complete the climb.
12. Ensure grade of side slope does not exceed 30 percent on inclinometer (Figure 1, Item 1).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - STEEP GRADES (DESCENDING)

INITIAL SETUP:

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)
Parking brake released (WP 0012)

UNUSUAL ENVIRONMENT/WEATHER

WARNING

The driver is responsible for the safety of personnel riding in vehicle. Drivers must refuse to move a vehicle if anyone is in an unsafe position or the vehicle has too many passengers. Driver must visually check to make sure all areas of vehicle are clear of personnel prior to attempting to start engine. Always use seat belts/shoulder harnesses when vehicle is in operation. Ensure driver side and commander side mirrors are adjusted to allow full range of vision. Failure to comply may result in serious injury and/or death to personnel.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoid side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury and/or death to personnel.

The driver's field of view is limited. Ensure that the mirrors are positioned so as to allow for a maximum range of vision prior to vehicle operation. Ground guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of the vehicle and remain within view of the driver. Failure to comply may lead to a vehicle collision/accident resulting in injury or death to personnel and/or damage to equipment.

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the Central Tire Inflation System (CTIS) Driver Display Module (DDM) can help identify a tire problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment.

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in injury to personnel and/or damage to equipment.

Always descend hills with extreme care and approach slopes head on. Do not shift into a higher gear than is necessary to control vehicle speed. Attempt to maintain a constant engine speed and do not come to a complete stop while descending hill. Use good judgment. If hill appears too steep to descend, do not attempt. Failure to comply may result in vehicle rollover or runaway, causing serious injury or death to personnel and/or damage to equipment.

Never coast downhill. Service brakes alone should not be used to control speed on major downgrades. Failure to comply may result in injury or death to personnel.

Stop vehicle before beginning descent. Ensure transfer case is in XFER LO and FRONT AXLE switch is ON before descending grade. Failure to comply may result in damage to equipment and serious injury or death to personnel.

CAUTION

The engine oil pressure has three monitoring systems: RED indicator light on OIL PSI gauge, RED ENGINE light, and OIL PSI gauge. If any two of the three systems indicate a problem, park vehicle, shut down engine, and notify Field Level Maintenance. If only one system indicates a problem and the other two are operating normally, proceed with your mission and notify Field Level Maintenance upon completion. Failure to comply may result in damage to equipment.

The engine coolant temperature has three monitoring systems: WATER temperature gauge RED indicator light, RED ENGINE light, and WATER temperature gauge. If any two of the three indicate a problem, park vehicle and allow engine to idle until water temperature cools down. If water temperature does not go down, shut down engine and notify Field Level Maintenance. Failure to comply may result in damage to equipment.

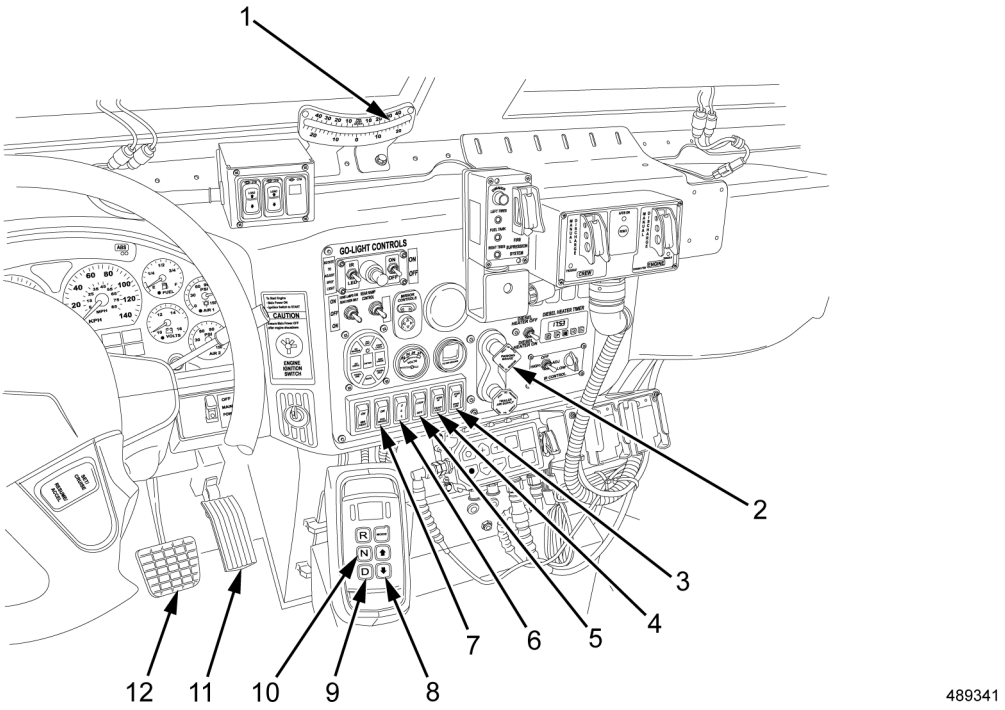


Figure 1. Descent Controls.

1. Apply service brake (Figure 1, Item 12) to stop vehicle prior to descent.
2. Pull YELLOW parking brake knob (Figure 1, Item 2) OUT to engage parking brake.
3. Place transmission gear selector in NEUTRAL (N) (Figure 1, Item 10).
4. Push FRONT AXLE switch (Figure 1, Item 4) ON.
5. Push XFER LO on XFER switch (Figure 1, Item 3).
6. Push LOCK on DIFF LOCK switch (Figure 1, Item 5).
7. Push ENG BRAKE switch (Figure 1, Item 7) ON.

NOTE

Depending on steepness of grade, ENG BRAKE control switch position 1 allows 33% engine braking, position 2 allows 66% engine braking, and position 3 allows 100% engine braking.

8. Select 1, 2, or 3 on ENG BRAKE control switch (Figure 1, Item 6).
9. Place transmission gear selector in DRIVE (D) (Figure 1, Item 9).
10. Control downhill speed by removing foot from accelerator pedal (Figure 1, Item 11) and selecting a lower transmission gear than would be required to descend slope, using transmission gear selector DOWN arrow (Figure 1, Item 8).
11. Push YELLOW parking brake knob (Figure 1, Item 2) IN to release parking brake.
12. Release service brake (Figure 1, Item 12).
13. Verify grade of side slope does not exceed 30 percent on inclinometer (Figure 1, Item 1).

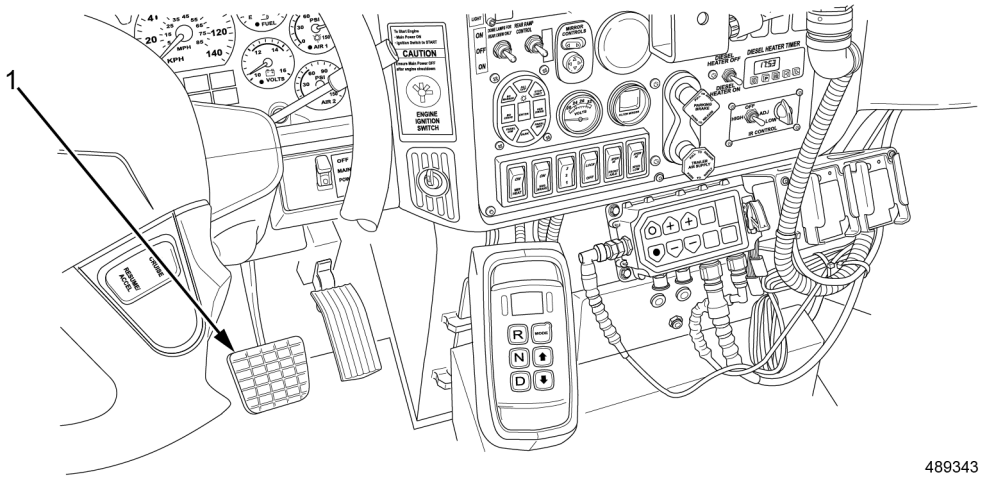


Figure 2. Service Brake.

WARNING

Do not apply steady pressure to service brake during descent. Applying steady pressure to service brake during descent will cause brake system overheating and loss of system air pressure that can cause brakes to lock-up. Failure to comply may result in damage to equipment and serious injury or death to personnel.

14. If necessary, intermittently apply service brake (Figure 2, Item 1) while descending.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - DRIVER TOWING OPERATION

INITIAL SETUP:

References
WP 0004
WP 0012
WP 0013

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)
Disabled vehicle hooked up for flat towing (WP 0103)

UNUSUAL ENVIRONMENT/WEATHER

WARNING

If brakes of disabled vehicle are inoperable, do not flat tow disabled vehicle. Notify Field Level Maintenance. Do not move towing vehicle, in a congested area, without assistance of ground guide. Ground guide must be visible to operator in a congested area. Ensure that all personnel are clear of vehicle before removing wheel chocks and starting to tow vehicle. Ensure service brake lights, emergency flashers, turn signals, and service brakes on the towed vehicle operate in coordination with the towing vehicle. Personnel must not occupy vehicle being towed. The maximum speed limit on unpaved roads when towing is 15 mph (24 kph). Terrain, weather, and other conditions may require reduced speeds. Avoid sharp turns. On paved roads, speeds may be increased to 25 mph (40 kph) if conditions permit. Prior to disconnecting tow bar, ensure that vehicles are on level surface with wheels chocked. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Vehicles with catastrophic damage to the front axle and suspension may require the axle to be properly secured to the chassis for safe recovery of the vehicle. Never attach safety chains to axles or suspension components that are no longer physically attached to the vehicle. Never cross the safety chains. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Towing disabled vehicle from rear is not authorized. The lack of rear lift tow bar provisions requires improvised rigging, which decreases vehicle stability. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Keep hands away from pintle hook when aligning lunette eye or connecting and disconnecting tow bars. Hands and fingers can get caught and crushed between pintle hook and tow bars. Failure to comply may result in serious injury or death to personnel.

The vehicle has a high center of gravity. Slow down for turns and other maneuvers. Speeds must be reduced according to weather and road/terrain conditions. Approach slopes head-on and avoids side slopes whenever possible. Failure to comply may cause the vehicle to roll over, which may result in serious injury or death to personnel and/or damage to equipment.

Towing operators shall also consider the center of gravity of disabled vehicle when conducting towing operations in order to avoid roll over of towed vehicles. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Soft shoulders can collapse. Vehicles can roll over. Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Failure to comply may result in serious injury or death to personnel.

The driver’s field of view is limited. Ensure that mirrors are positioned to allow for a maximum range of vision prior to vehicle operation. Ground guides must be used when operating in congested areas or when operating in reverse. Ground guides must stand clear of the vehicle and remain within view of the driver. Failure to comply may lead to a vehicle collision/accident resulting in injury or death to personnel and/or damage to equipment.

Ensure that the service brake lights, emergency flashers, turn signals, and service brakes on towed equipment operate in coordination with towing vehicle. Failure to comply may result in injury or death to personnel.

CAUTION

Disabled vehicle must not be towed more than 10 mi (16 km) with propeller shaft installed. Transmission on disabled vehicle will overheat. Failure to comply may cause damage to equipment.

Towing a disabled vehicle negatively affects handling and mobility properties of towing vehicle, increasing the load on the powertrain, and increasing both time and distance needed to accelerate and to bring both vehicles to a complete stop. Towing vehicle operators must take into consideration additional factors such as terrain, road condition, environmental conditions, weight, and center of gravity of disabled vehicle prior to conducting towing operations.

Avoid sharp turns. Proceed slowly in turns to prevent skidding. Failure to comply may result in damage to equipment.

The engine oil pressure has three monitoring systems: RED indicator light on OIL PSI gauge, RED ENGINE light, and OIL PSI gauge. If any two of the three systems indicate a problem, park vehicle, shut down engine, and notify Field Level Maintenance. If only one system indicates a problem and the other two are operating normally, proceed with your mission and notify Field Level Maintenance upon completion. Failure to comply may result in damage to equipment.

The engine coolant temperature has three monitoring systems: WATER temperature gauge RED indicator light, RED ENGINE light, and WATER temperature gauge. If any two of the three indicate a problem, park vehicle and allow engine to idle until water temperature cools down. If water temperature does not go down, shut down engine and notify Field Level Maintenance. Failure to comply may result in damage to equipment.

Driver Tow Procedure

1. Push RED TRAILER AIR SUPPLY knob IN firmly on towing vehicle. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. If towing disabled vehicle for more than 10 mi (16 km), notify Field Level Maintenance to disconnect propeller shaft of disabled vehicle.
3. Once towing operation is complete, stop both vehicles by applying service brake pedal.
4. Pull RED TRAILER AIR SUPPLY knob OUT firmly on towing vehicle. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
5. Shutdown towing vehicle. Refer to WP 0013, Operation Under Usual Conditions Engine Shutdown.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Vehicle Speed During Tow Operation

1. Operate vehicle using normal driving procedures. Refer to WP 0012, Operating Under Usual Conditions - Normal Driving Procedures.
2. It is recommended that operator maintain speeds 10 mph (16 kph) less than the posted speed limit or convoy speed limit.
3. To apply service brake to disabled vehicle only, use trailer brake hand control. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
4. Use service brake pedal of towing vehicle to slow both vehicles.

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Turning During Tow Operation

1. Avoid sharp turns.
2. Slow well in advance of turns.
3. Turn at 10 mph (16 kph) slower than the posted speed limit for the turn.
4. Only use service brake pedal of towing vehicle to slow both vehicles once in the turn.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - WINCH OPERATION

INITIAL SETUP:

Materials/Parts
Controller, winch (WP 0108, Item 14)
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

References
WP 0011
WP 0013
WP 0048

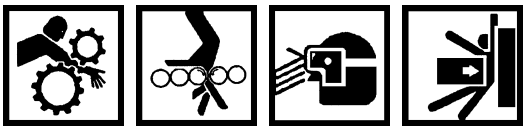
Personnel Required
Crewmember - (2)

Equipment Condition
Engine shutdown (WP 0013)

DEGRADED CONDITION

Winch Setup and Operation

WARNING



Do not use parts other than those specified for the system being serviced. Failure to comply may result in serious injury to personnel and damage to equipment.

Vehicle curb weight exceeds winch capacity. Do not use winch for self-recovery operations. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Do not exceed rated pulling capacity of winch. Winch is rated to pull maximum load of 18,000 lb (8165 kg) when pulling first layer of winch cable onto winch drum. Failure to comply may result in serious injury to personnel and damage to equipment.

All personnel involved in winch operations must wear safety goggles and heavy leather-palmed gloves. Before removing winch cable from vehicle, check winch cable for damage such as frayed wires, binds, or kinks. If damaged, replace cable. A broken wire could cut through gloves and injure hand. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

When operating winch, do not wear loose clothing; it can get caught in cable as cable winds around spool drum. Keep a minimum of five wraps of cable on drum when using winch. Fewer wraps may cause cable to pull free of drum and release load. Failure to comply may result in serious injury or death to personnel.

During winching operations, all personnel must remain either inside the vehicle or outside a circled area with a radius that is twice the length of the extended winch wire rope when measured from both the winch and the load point. Failure to comply may result in death or injury to personnel.

When operating winch, ensure there are no objects in path of winch cable or vehicle. To prevent accidental release, make sure pull-cable fitting is attached before removing mechanical lever lockpin. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Avoid continuous side pulls that can pile up winch cable at one end of the drum. Ensure the clutch is fully engaged or disengaged. Never use winch to tow other vehicles. Never jog winch cable under load. Shock loads can momentarily exceed capacity of winch cable and winch. Never use winch to secure a load during transport. Never submerge winch in water. Disconnect remote when not in use and store in designated stowage place. Prolonged use of the winch without cooling will damage the motor. In addition, if the engine is idling during winching, the battery may drain faster than it is charging. Pay close attention to VOLTS gauge on Instrument Panel (IP) cluster. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Discontinue use of winch if Overload Interrupt (OLI) device is tripped. The OLI guards against overloading the motor, geartrain, and wire rope. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

CAUTION

Never leave remote control plugged into winch while free spooling, rigging, or sitting idle. Never hook winch cable back onto itself. Do not continue to run a stalled winch. Failure to comply may result in damage to equipment.

When using winch, do not allow cable to deviate more than 30 degrees from straight ahead of vehicle. Winch efficiency will degrade. Winch fairlead is located so winch cable, when properly used, will not contact vehicle. Failure to comply may result in damage to equipment.

NOTE

The winch is controlled by a hand-held remote-control switch to allow the operator to stand clear during winch operation.

For prolonged use of winch, start engine.

Free-spooling of winch drum will conserve battery power.

Winch is designed to assist operator move obstacles or debris from operating area. An assistant is required for operation of winch.

The OLI device guards against overloading the winch motor, gear train, and wire rope. When the load exceeds maximum capacity, the OLI device trips and temporarily disables winching operations to prevent damage to equipment.

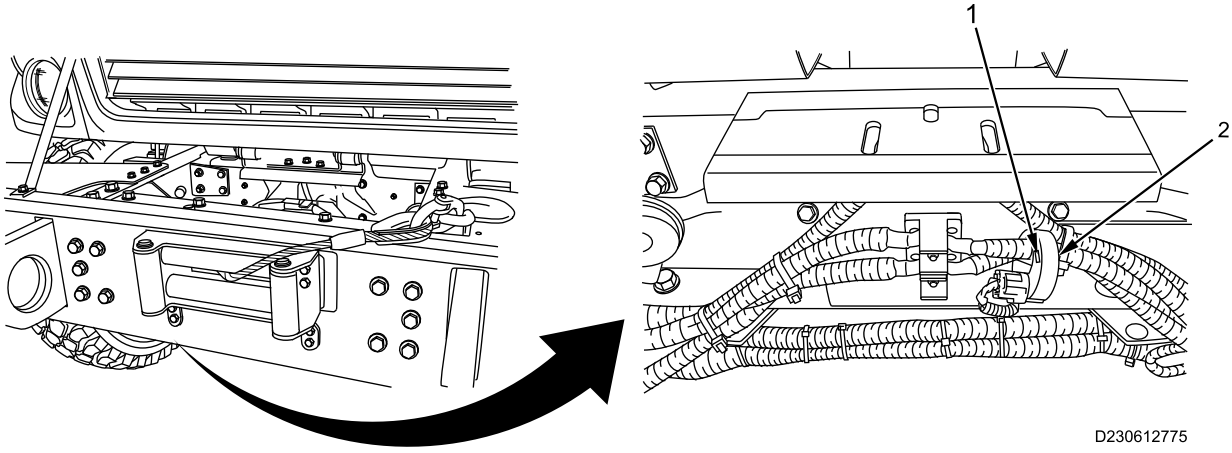


Figure 1. OLI Device.

1. Check RED LED indicator (Figure 1, Item 1) on side of OLI device (Figure 1, Item 2).
   a. If RED LED indicator (Figure 1, Item 1) on OLI device (Figure 1, Item 2) is flashing, do not attempt to operate winch until LED indicator turns OFF.

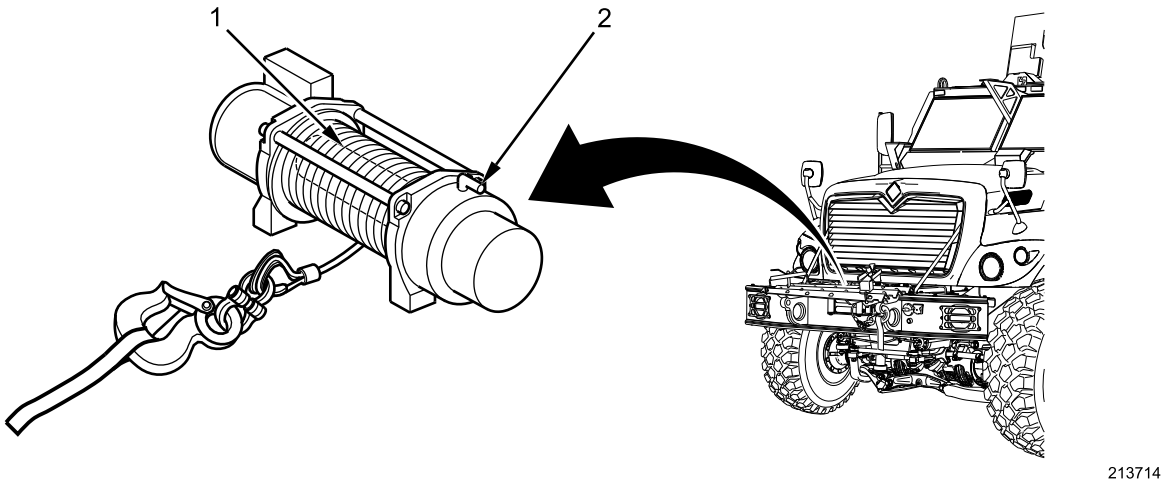


Figure 2. Winch Assembly.

2. Rotate winch clutch lever (Figure 2, Item 2) toward driver side of vehicle to disengage winch clutch and allow free-spooling of winch drum (Figure 2, Item 1).

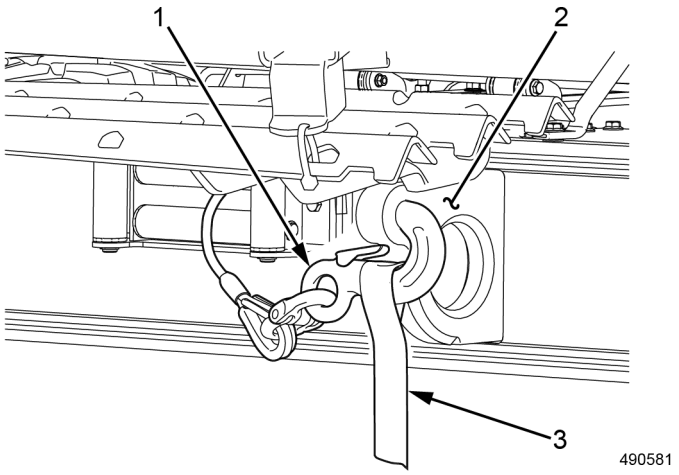


Figure 3. Winch Cable Hook Removal.

3. Free end of cloth strap (Figure 3, Item 3) on winch cable hook (Figure 3, Item 1).
4. Remove winch cable hook (Figure 3, Item 1) from front towing eye (Figure 3, Item 2).

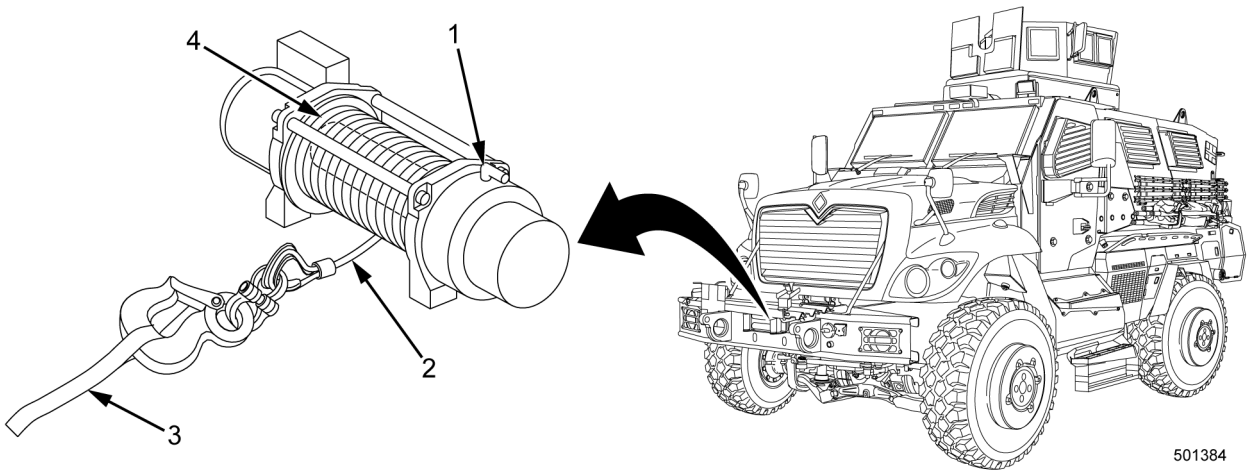


Figure 4. Winch Cable.

WARNING

Do not hold winch cable hook when pulling out or reeling in winch cable. Use cloth strap to hold winch cable hook. Failure to comply may result in serious injury to personnel.

CAUTION

Ensure winch cable does not drag on ground when spooling winch cable out. Failure to comply may result in damage to equipment.

NOTE

Step 5 is not performed if winch cable will not pull manually.

5. With assistant, use cloth strap (Figure 4, Item 3), pull out winch cable (Figure 4, Item 2) to target area. Keep tension on winch cable to prevent it from twisting or overlapping.
6. Rotate winch clutch lever (Figure 4, Item 1) toward commander side of vehicle to engage winch clutch. Winch drum (Figure 4, Item 4) can now be operated electronically.

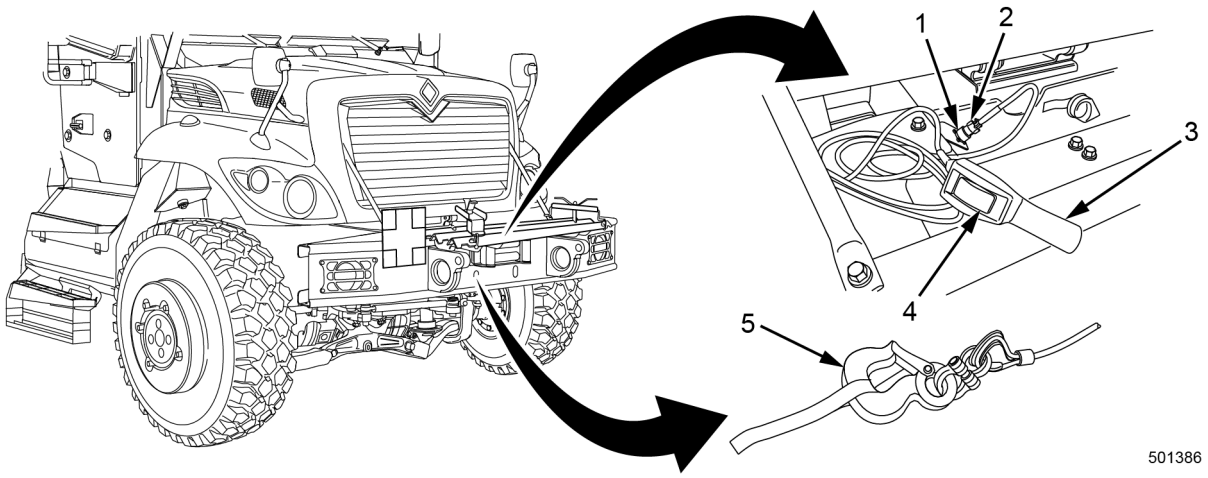


Figure 5. Winch Remote Control.

CAUTION

Never leave remote control plugged into winch while free-spooling, rigging, or sitting idle. Failure to comply may result in damage to equipment.

7. Connect plug (Figure 5, Item 2) on remote control (Figure 5, Item 3) to winch remote control connector (Figure 5, Item 1).
8. Use switch (Figure 5, Item 4) on remote control (Figure 5, Item 3) for final adjustments at target area.
9. Connect winch cable hook (Figure 5, Item 5) to object being pulled.
10. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
11. Run engine at 1200 to 1500 rpm or higher to maintain electrical charge of winching vehicle. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.
12. Use switch (Figure 5, Item 4) to put winch cable (Figure 6, Item 5) under tension slowly.

CAUTION

Ensure winch cable is winding evenly and tightly around drum. Ensure winch cable does not drag on ground when spooling winch cable out. Failure to comply may result in damage to equipment.

13. With assistant, slowly and steadily begin winching.

END OF TASK

DEGRADED CONDITION

After Winch Pull

WARNING

During winching operations, all personnel must remain either inside the vehicle or outside a circled area with a radius that is twice the length of the extended winch cable. Failure to comply may result in serious injury or death to personnel.

All personnel involved in winch operations must wear safety goggles and heavy leather-palmed gloves. A broken wire could cut through gloves and injure hand. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

1. Allow engine to idle with throttle idle controls activated. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Controls.

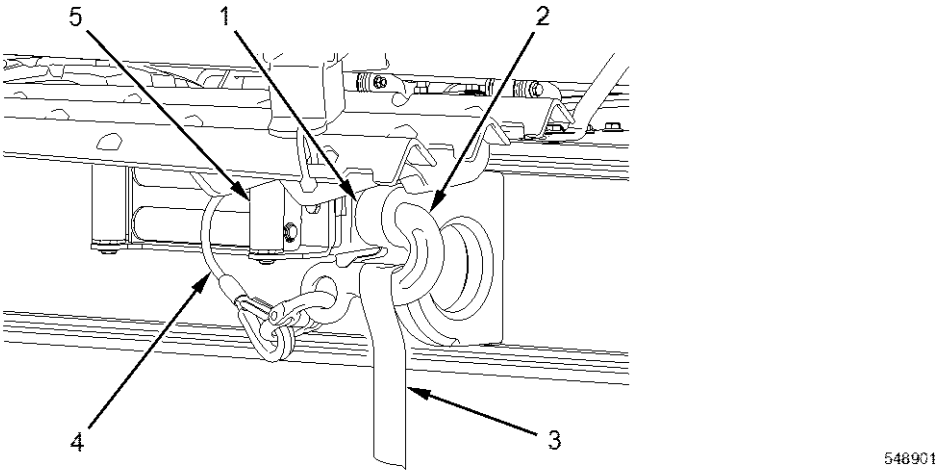


Figure 6. Winch Cable Hook Stowage.

CAUTION

Ensure winch cable is winding evenly and tightly around drum. Ensure winch cable does not drag on ground when spooling winch cable out. Failure to comply may result in damage to equipment.

2. Disconnect winch cable hook (Figure 6, Item 2) from pulled object.

WARNING

Do not hold winch cable hook when pulling out or reeling in winch cable. Use cloth strap to hold winch cable hook. Failure to comply may result in serious injury to personnel.

3. While holding cloth strap (Figure 6, Item 3), rewind winch cable (Figure 6, Item 4) by reeling carefully out and in under tension to ensure proper alignment on drum spool.
4. Stop winch cable (Figure 6, Item 4) with winch cable hook (Figure 6, Item 2) 3 feet from rollers (Figure 6, Item 5).
5. Connect winch cable hook (Figure 6, Item 2) to front towing eye (Figure 6, Item 1).
6. With assistant, continue reeling winch cable (Figure 6, Item 4) until snug.
7. Shutdown engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

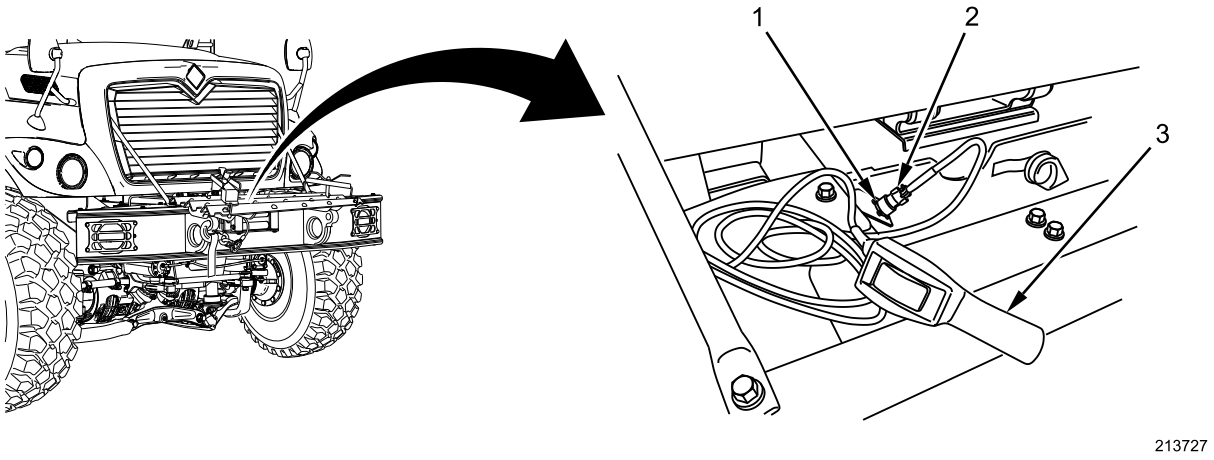


Figure 7. Winch Remote Control.

8. Disconnect plug (Figure 7, Item 2) on remote control (Figure 7, Item 3) from winch remote control connector (Figure 7, Item 1).

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

OPERATION UNDER UNUSUAL CONDITIONS - MANUAL REAR DOOR/RAMP OPERATION

INITIAL SETUP:

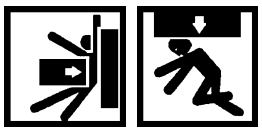
Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)

Parking brake set (WP 0013)

UNUSUAL ENVIRONMENT/WEATHER

Raise Rear Door/Ramp

WARNING



Ensure no one is behind vehicle when lowering rear door/ramp. Use extreme caution when using emergency rear door/ramp release, to ensure no one is struck by door as it falls open. Sound horn before lowering rear door/ramp. Do not operate rear door/ramp when vehicle is in motion. Failure to comply may result in serious injury or death to personnel.

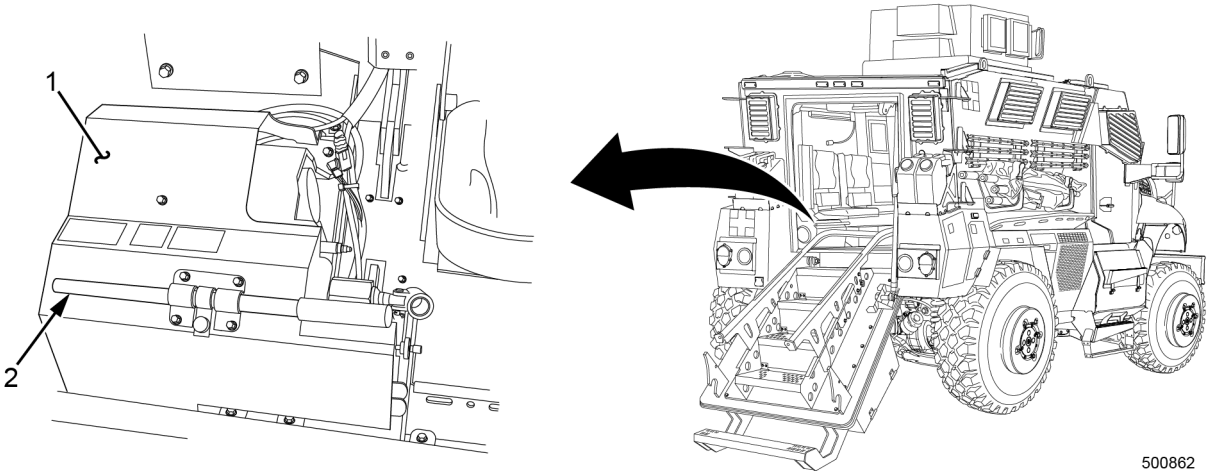


Figure 1. Pump Handle Storage.

1. Remove pump handle (Figure 1, Item 2) from side of hydraulic pump cover (Figure 1, Item 1).

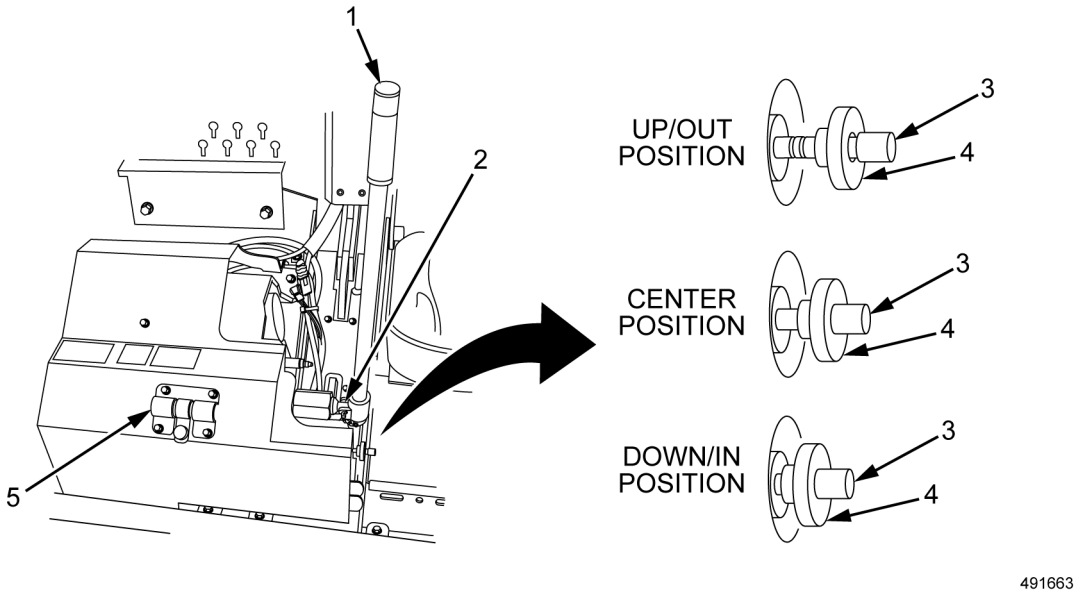


Figure 2. Top Plunger and Handle.

2. Pull plunger disk (Figure 2, Item 4) out and pull knob (Figure 2, Item 3) out until plunger disk locks into out position.
3. Ensure knob (Figure 2, Item 3) is pulled out.
4. Insert pump handle (Figure 2, Item 1) into pump (Figure 2, Item 2). Pump handle left and right to raise rear door/ramp.
5. After completion, return plunger disk (Figure 2, Item 4) to center position.
6. Install pump handle (Figure 2, Item 1) on side of hydraulic pump cover (Figure 2, Item 5).

END OF TASK

UNUSUAL ENVIRONMENT/WEATHER

Lower Rear Door/Ramp

1. Remove pump handle (Figure 2, Item 1) from side of hydraulic pump cover (Figure 2, Item 5).
2. Pull plunger disc (Figure 2, Item 4) out and push knob (Figure 2, Item 3) in until plunger disk locks into in position.
3. Insert pump handle (Figure 2, Item 1) into pump (Figure 2, Item 2). Pump handle left and right to lower rear door/ramp.
4. After completion, return plunger disk (Figure 2, Item 4) to center position.
5. Install pump handle (Figure 2, Item 1) on side of hydraulic pump cover (Figure 2, Item 5).

END OF TASK

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - SIDE DOORS EGRESS

INITIAL SETUP:

Tools and Special Tools
Lock removal device (WP 0108, Item 33)
Screwdriver, cross tip, # 2 (WP 0108, Item 46)

References
WP 0005

WARNING

Notify Field Level Maintenance following emergency operations so that vehicle can be inspected and restored to proper operating condition. Failure to comply may result in injury or death to personnel.

Do not use side door handles as hand grip to enter or exit vehicle cabin. Use of any side door handle as hand grip may cause air-assisted side door to open or close. Failure to comply may result in injury or death to personnel.

The side doors are heavy. Ensure that no one is standing directly beside them before opening and closing. Use caution when opening or closing the doors, especially when the vehicle is parked on an incline or decline. Ensure that all body parts and gear are clear before closing side doors. Failure to comply may result in injury or death to personnel.

NOTE

Emergency rescue procedures from outside of vehicle require unlocking the combat lock.

There are three methods of using the Universal Combat Lock Tool (UCLT) to unlock the combat lock. They are presented in order of preference. Use of a screwdriver is an alternative method to be used if the UCLT is not available.

EMERGENCY OPERATION - SIDE DOORS EGRESS - (CONTINUED)

SIDE DOOR OPERATION WITH UCLT (MAXXPRO MEAP ADAPTER END)

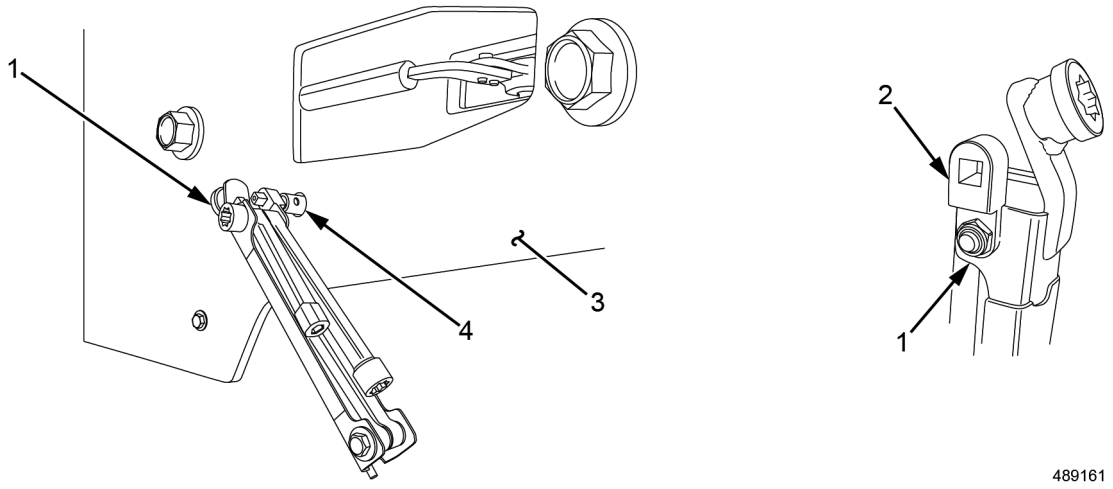


Figure 1. Combat Lock Shaft and UCLT (MAXXPRO MEAP Adapter End).

NOTE

Commander side shown; driver side similar.

1. Install MAXXPRO MEAP adapter end (Figure 1, Item 2) of Universal Combat Lock Tool (UCLT) (Figure 1, Item 1) on combat lock shaft (Figure 1, Item 4).

NOTE

UCLT rotates counterclockwise for commander side door and clockwise for driver side door.

2. Rotate UCLT (Figure 1, Item 1) to disengage combat lock.
3. Remove MAXXPRO MEAP adapter end (Figure 1, Item 2) of UCLT (Figure 1, Item 1) from combat lock shaft (Figure 1, Item 4).
4. Open side door (Figure 1, Item 3). Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.

EMERGENCY OPERATION - SIDE DOORS EGRESS - (CONTINUED)

Side Door Operation With UCLT (MATV/DASH Adapter End)

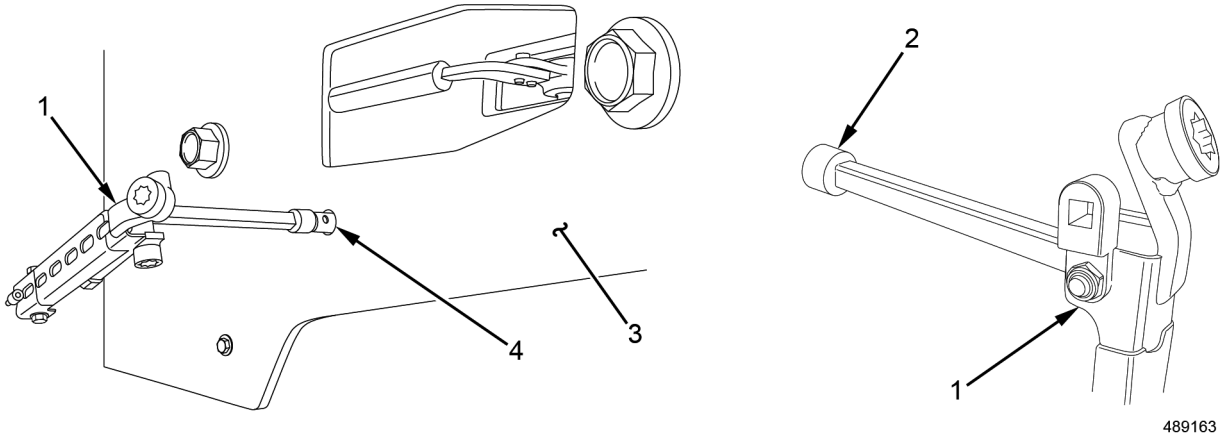


Figure 2. Combat Lock Shaft and UCLT (MATV/DASH Adapter End).

NOTE

Commander side shown; driver side similar.

1. Install MATV/DASH adapter end (Figure 2, Item 2) of UCLT (Figure 2, Item 1) on combat lock shaft (Figure 2, Item 4).

NOTE

UCLT rotates counterclockwise for commander side door and clockwise for driver side door.

2. Rotate UCLT (Figure 2, Item 1) to disengage combat lock.
3. Remove MATV/DASH adapter end (Figure 2, Item 2) of UCLT (Figure 2, Item 1) from combat lock shaft (Figure 2, Item 4).
4. Open side door (Figure 2, Item 3). Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.

EMERGENCY OPERATION - SIDE DOORS EGRESS - (CONTINUED)

Side Door Operation With UCLT (MAXXPRO Adapter End)

NOTE

Ensure textured surface of UCLT faces vehicle when using tool to open door.

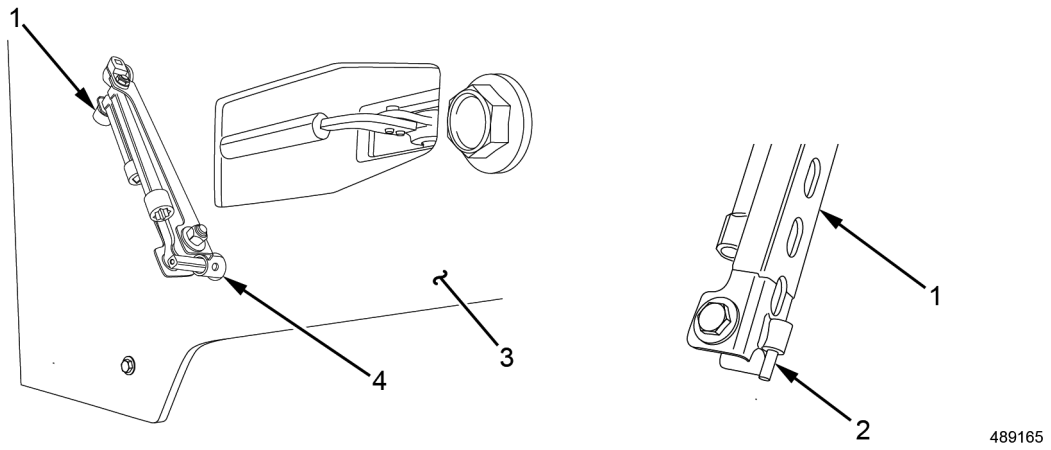


Figure 3. Combat Lock Shaft and UCLT (MAXXPRO Adapter End).

NOTE

Commander side shown; driver side similar.

1. Install MAXXPRO adapter end (Figure 3, Item 2) of UCLT (Figure 3, Item 1) on combat lock shaft (Figure 3, Item 4).

NOTE

UCLT rotates counterclockwise for commander side door and clockwise for driver side door.

2. Rotate UCLT (Figure 3, Item 1) to disengage combat lock.
3. Remove MAXXPRO adapter end (Figure 3, Item 2) of UCLT (Figure 3, Item 1) from combat lock shaft (Figure 3, Item 4).
4. Open side door (Figure 3, Item 3). Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.

EMERGENCY OPERATION - SIDE DOORS EGRESS - (CONTINUED)

SIDE DOOR OPERATION WITH SCREWDRIVER

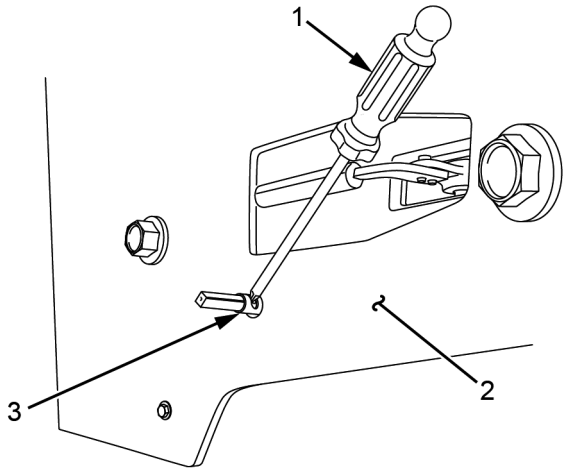


Figure 4. Combat Lock Shaft and Screwdriver.

NOTE

Commander side shown; driver side similar.

1. Insert screwdriver (Figure 4, Item 1) in hole on combat lock shaft (Figure 4, Item 3).

NOTE

Screwdriver rotates counterclockwise for commander side door and clockwise for driver side door.

2. Rotate screwdriver (Figure 4, Item 1) to disengage combat lock.
3. Remove screwdriver (Figure 4, Item 1) from hole on combat lock shaft (Figure 4, Item 3).
4. Open side door (Figure 4, Item 2). Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - SIDE DOORS EGRESS WITH ROCKET PROPELLED GRENADE (RPG) NETS

INITIAL SETUP:

Tools and Special Tools
Lock removal device (WP 0108, Item 33)
Screwdriver, cross-tip # 2 (WP 0108, Item 46)

References
WP 0042

WARNING

Notify Field Level Maintenance following emergency operations so that vehicle can be inspected and restored to proper operating condition. Failure to comply may result in injury or death to personnel.

Do not use side door handles as hand grip to enter or exit vehicle cabin. Use of any side door handle as hand grip may cause air-assisted side door to open or close. Failure to comply may result in injury or death to personnel.

The side doors are heavy. Ensure that no one is standing directly behind the door before opening and closing it. Ensure that hands and feet are clear of the area before closing the door. Use caution when opening or closing the doors, especially when the vehicle is parked on an incline. Failure to comply may result in injury to personnel.

Ensure that hands and feet are clear of the Rocket Propelled Grenade (RPG) nets before opening or closing side doors. Hands and feet can become entangled in the RPG nets. Failure to comply may result in serious injury to personnel and/or damage to equipment.

NOTE

Emergency rescue procedures from outside of vehicle require unlocking the combat lock.

There are three methods of using the Universal Combat Lock Tool (UCLT) to unlock the combat lock. They are presented in order of preference. Use of a screwdriver is an alternative method to be used if the UCLT is not available.

EMERGENCY OPERATION - SIDE DOORS EGRESS WITH ROCKET PROPELLED GRENADE (RPG) NETS - (CONTINUED)

Side Door Operation With UCLT (MAXXPRO MEAP Adapter End)

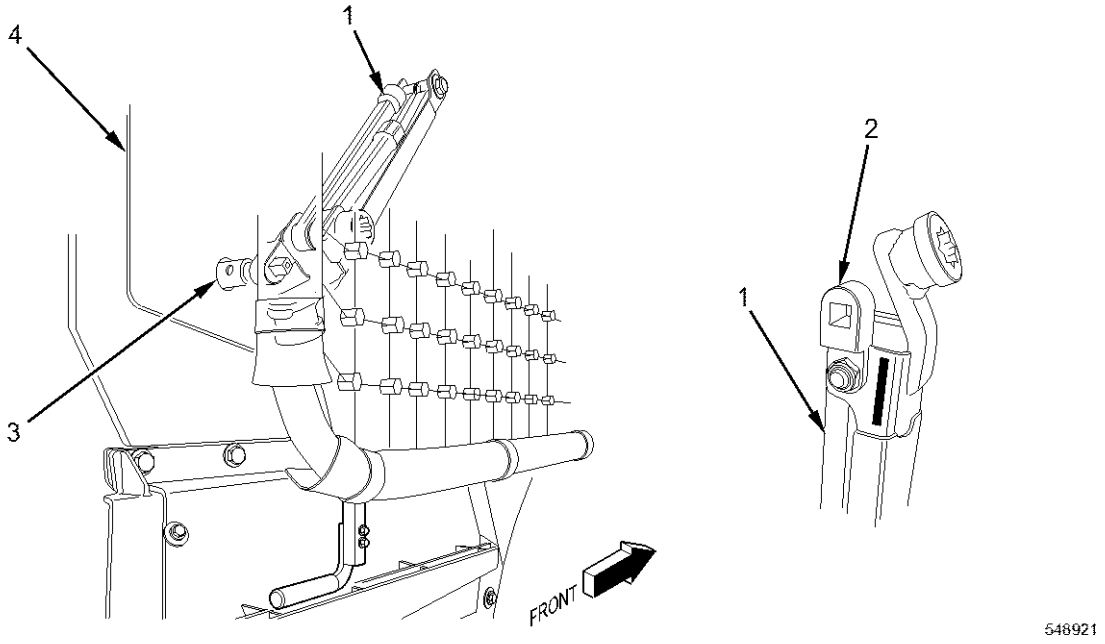


Figure 1. Combat Lock Shaft and UCLT (MAXXPRO MEAP Adapter End).

NOTE

Commander side shown; driver side similar.

1. Place MAXXPRO MEAP adapter end (Figure 1, Item 2) of Universal Combat Lock Tool (UCLT) (Figure 1, Item 1) on combat lock shaft (Figure 1, Item 3).
2. For commander side, rotate UCLT (Figure 1, Item 1) counterclockwise to disengage combat lock.
3. For driver side, rotate UCLT (Figure 1, Item 1) clockwise to disengage combat lock.
4. Remove MAXXPRO MEAP adapter end (Figure 1, Item 2) of UCLT (Figure 1, Item 1) from combat lock shaft (Figure 1, Item 3).
5. Open side door (Figure 1, Item 4). Refer to WP 0042, Operation Under Unusual Conditions - Side Doors Operation with Rocket Propelled Grenade (RPG) Nets.

EMERGENCY OPERATION - SIDE DOORS EGRESS WITH ROCKET PROPELLED GRENADE (RPG) NETS - (CONTINUED)

Side Door Operation With UCLT (MATV/DASH Adapter End)

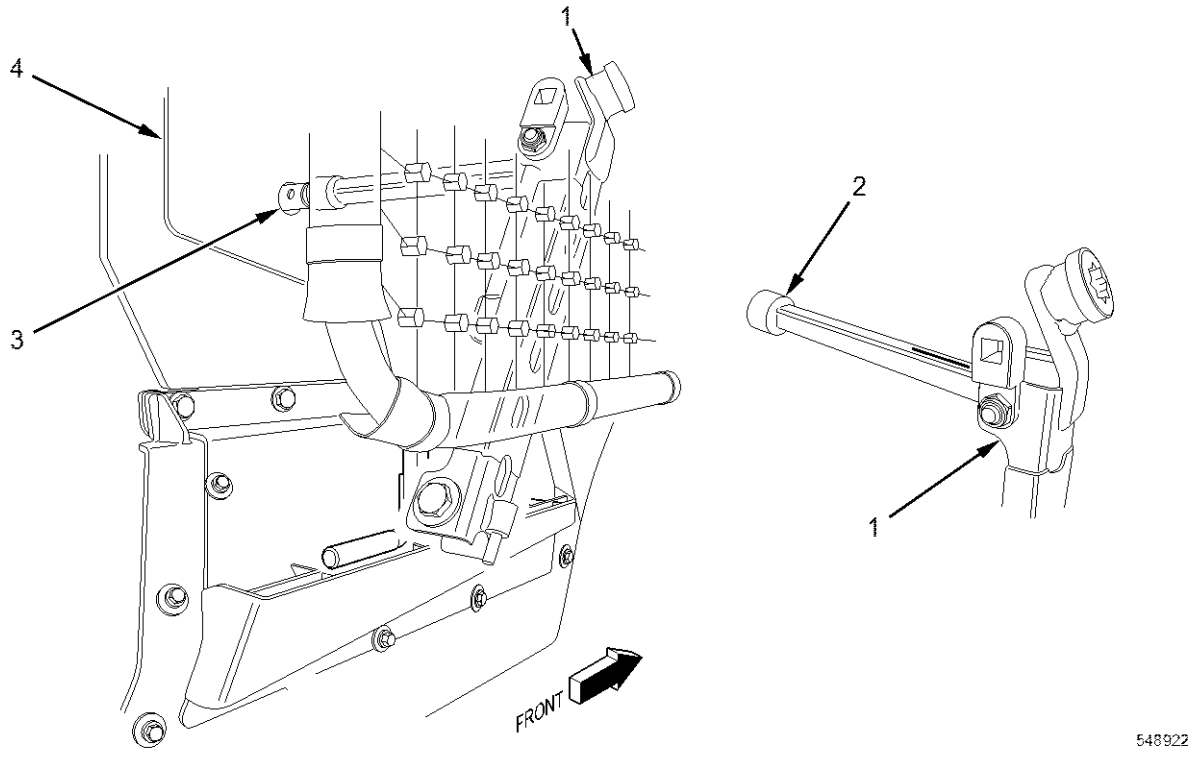


Figure 2. Combat Lock Shaft and UCLT (MATV/DASH Adapter End).

NOTE

Commander side shown; driver side similar.

1. Place MATV/DASH adapter end (Figure 2, Item 2) of UCLT (Figure 2, Item 1) on combat lock shaft (Figure 2, Item 3).
2. For commander side, rotate UCLT (Figure 2, Item 1) counterclockwise to disengage combat lock.
3. For driver side, rotate UCLT (Figure 2, Item 1) clockwise to disengage combat lock.
4. Remove MATV/DASH adapter end (Figure 2, Item 2) of UCLT (Figure 2, Item 1) from combat lock shaft (Figure 2, Item 3).
5. Open side door (Figure 2, Item 4). Refer to WP 0042, Operation Under Unusual Conditions - Side Doors Operation with Rocket Propelled Grenade (RPG) Nets.

EMERGENCY OPERATION - SIDE DOORS EGRESS WITH ROCKET PROPELLED GRENADE (RPG) NETS - (CONTINUED)

Side Door Operation With UCLT (MAXXPRO Adapter End)

NOTE

Ensure textured surface of UCLT faces vehicle when using tool to open door.

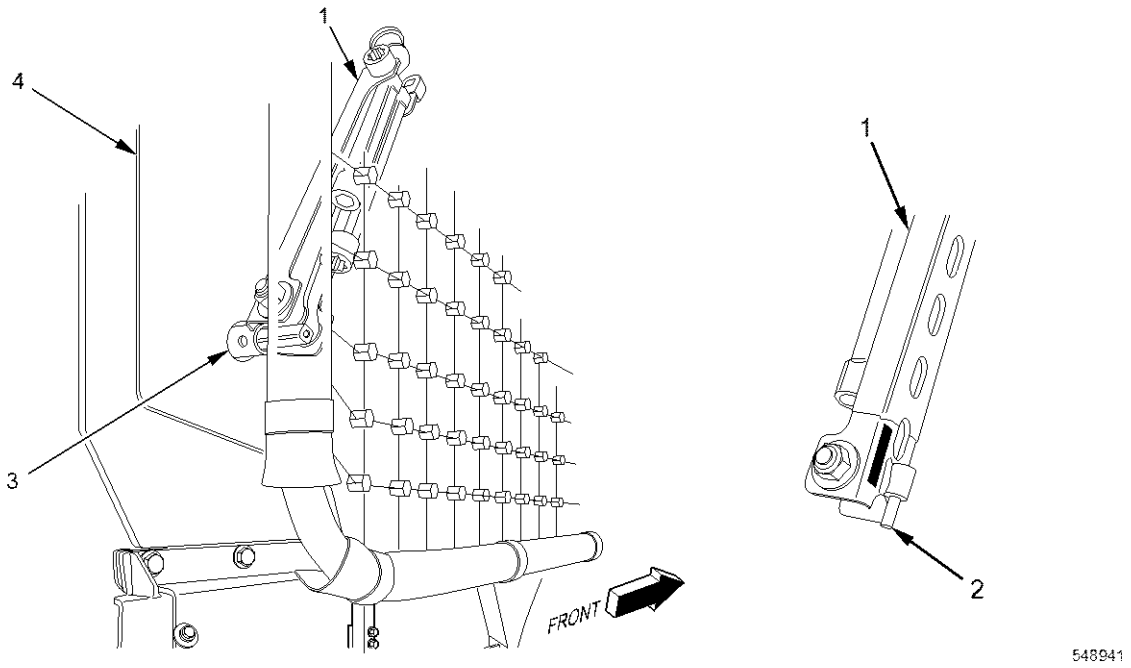


Figure 3. Combat Lock Shaft and UCLT (MAXXPRO Adapter End).

NOTE

Commander side shown; driver side similar.

1. Place MAXXPRO adapter end (Figure 3, Item 2) of UCLT (Figure 3, Item 1) on combat lock shaft (Figure 3, Item 3).
2. For commander side, rotate UCLT (Figure 3, Item 1) counterclockwise to disengage combat lock.
3. For driver side, rotate UCLT (Figure 3, Item 1) clockwise to disengage combat lock.
4. Remove MAXXPRO adapter end (Figure 3, Item 2) of UCLT (Figure 3, Item 1) from combat lock shaft (Figure 3, Item 3).
5. Open side door (Figure 3, Item 4). Refer to WP 0042, Operation Under Unusual Conditions - Side Doors Operation with Rocket Propelled Grenade (RPG) Nets.

EMERGENCY OPERATION - SIDE DOORS EGRESS WITH ROCKET PROPELLED GRENADE (RPG) NETS - (CONTINUED)

Side Door Operation With Screwdriver

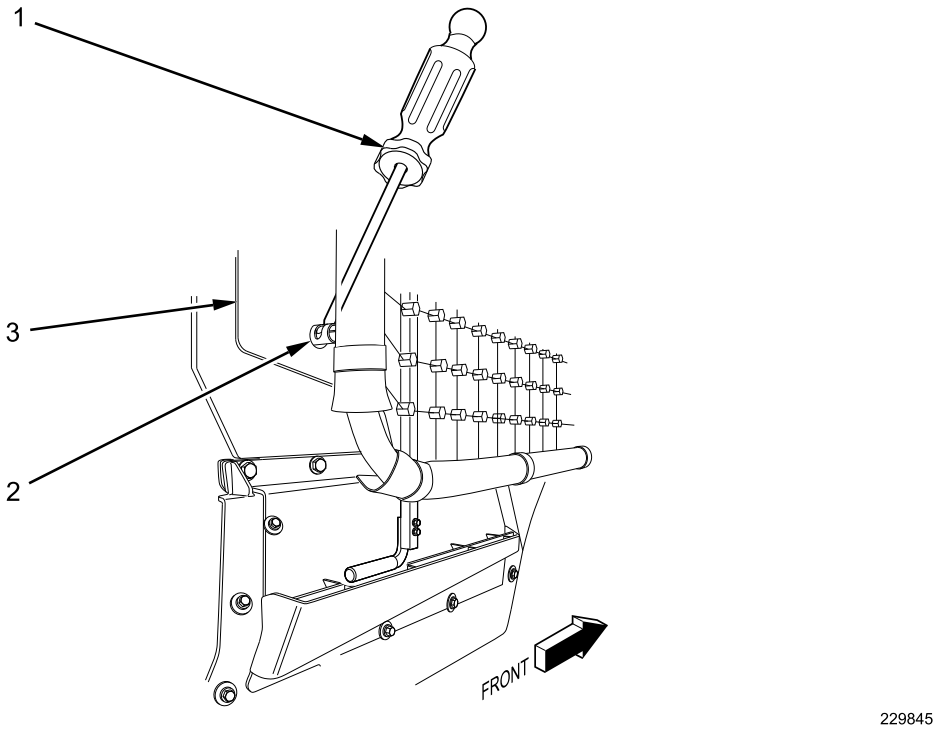


Figure 4. Combat Lock Shaft and Screwdriver.

NOTE

Commander side shown; driver side similar.

1. Insert No 2 cross-tip screwdriver (Figure 4, Item 1) into hole in combat lock shaft (Figure 4, Item 2).
2. For commander side, rotate screwdriver (Figure 4, Item 1) counterclockwise to disengage combat lock.
3. For driver side, rotate screwdriver (Figure 4, Item 1) clockwise to disengage combat lock.
4. Remove No 2 cross-tip screwdriver (Figure 4, Item 1) from hole in combat lock shaft (Figure 4, Item 2).
5. Open side door (Figure 4, Item 3). Refer to WP 0042, Operation Under Unusual Conditions - Side Doors Operation with Rocket Propelled Grenade (RPG) Nets.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - SEAT BELT EGRESS

INITIAL SETUP:

Materials/Parts
Cutter cable, vehicle mounted (WP 0108, Item 17)

References
WP 0009

EMERGENCY OPERATION - SEAT BELT EGRESS - (CONTINUED)

NOTE

One seat shown; all passenger seats, driver seat, commander seat, and medic seat similar.

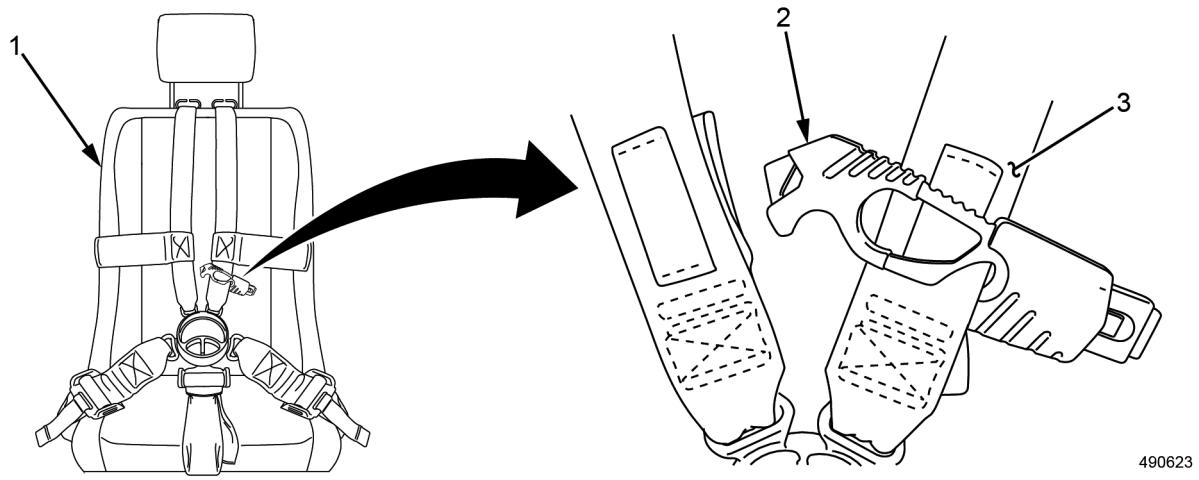


Figure 1. Seat Belt Cutter.

1. Unbuckle seat belt strap (Figure 1, Item 3). Refer to WP 0009, Operation Under Usual Conditions - Seat Belt Operation.

WARNING

Seat belts cutters are extremely sharp. Use caution when cutting seat belt straps, always cut away from the body. Failure to comply may result in serious injury or death to personnel.

NOTE

If seat belt does not unbuckle in step 1 and seat belt cutter is available, perform steps 2 and 3.

2. Cut seat belt strap (Figure 1, Item 3) with seat belt cutter (Figure 1, Item 2), to allow departure from seat (Figure 1, Item 1).
3. Repeat step 1 or step 2 on as many seat belt straps (Figure 1, Item 3) as necessary until free to exit.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - BLAST ENERGY ATTENUATING TURRET SEAT (BEATS) EGRESS

INITIAL SETUP:

NOT APPLICABLE

WARNING

Ensure straps are not kinked, knotted, damaged, cut, or frayed before fastening to platform. If damaged, cut, or frayed, notify Field Level Maintenance for replacement. Failure to comply may result in serious injury or death to personnel.

When adjusting Blast Energy Attenuating Turret Seat (BEATS) for use, ensure both feet are square on gunner platform and adjust seat back as far forward as possible to reduce the risk of injury. Failure to comply may result in serious injury or death to personnel.

Ensure gunner restraint harness is worn properly at all times. Harness should be free of twists. Twisted straps can cause injury when gunner moves suddenly in harness. Gunner should hold onto weapon or other supports to maintain stability at all times. Failure to comply may result in serious injury to personnel.

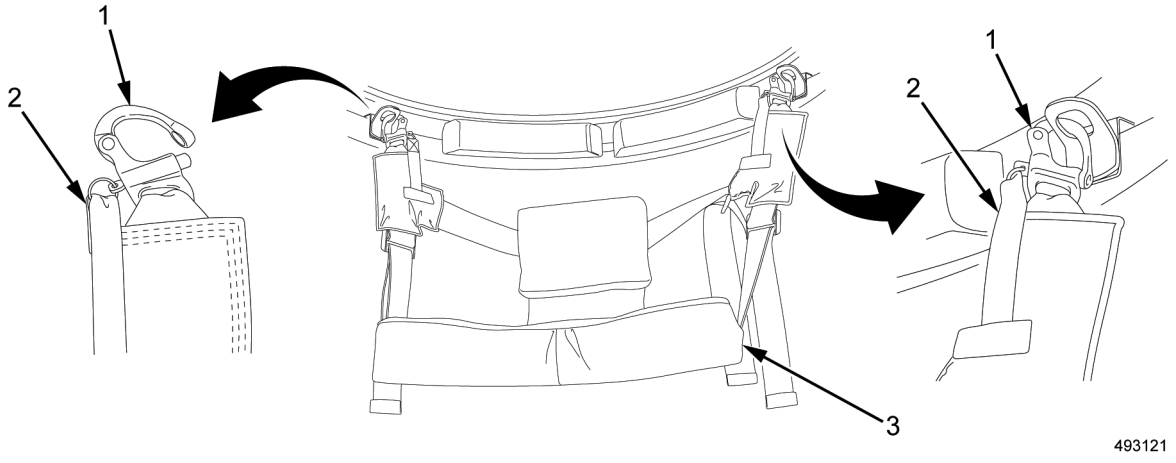


Figure 1. BEATS Emergency Release.

1. Pull emergency release pull tabs (Figure 1, Item 2) to open pelican clips (Figure 1, Item 1) to release seat (Figure 1, Item 3) from mounting hardware.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - IMPROVED GUNNER RESTRAINT SYSTEM (IGRS) EGRESS

INITIAL SETUP:

Tools and Special Tools
Belt, vehicular safety (WP 0108, Item 6)
Cutter, cable, vehicle mounted (WP 0108, Item 17)

WARNING

The Improved Gunner Restraint System (IGRS) is a protection system that includes a harness, tail strap, rigidly mounted retractor, and possibly a turret seat assembly. The IGRS is considered a personal safety restraint device. Crew members must be trained in rollover drills. The IGRS along with the rollover training is a safety enhancement for turreted vehicle systems. Do not rely solely on the IGRS to prevent injury in the event of a rollover. The IGRS is designed to prevent the gunner from ejecting from the vehicle during a dynamic event, it will not pull the gunner back into the vehicle. Failure to comply may result in injury or death to personnel.

Seat belt cutters are extremely sharp. Use caution when cutting seat belt straps, always cut away from the body. Failure to comply may result in serious injury or death to personnel.

Using commercial IGRS or mixing or modifying approved IGRS equipment to include restraint harness and retractor is unauthorized. Wearing the IGRS in any manner other than directed is not allowed. Failure to comply may result in injury or death to personnel.

EMERGENCY OPERATION - IMPROVED GUNNER RESTRAINT SYSTEM (IGRS) EGRESS - (CONTINUED)

Improved Gunner Restraint System (IGRS) Emergency Release

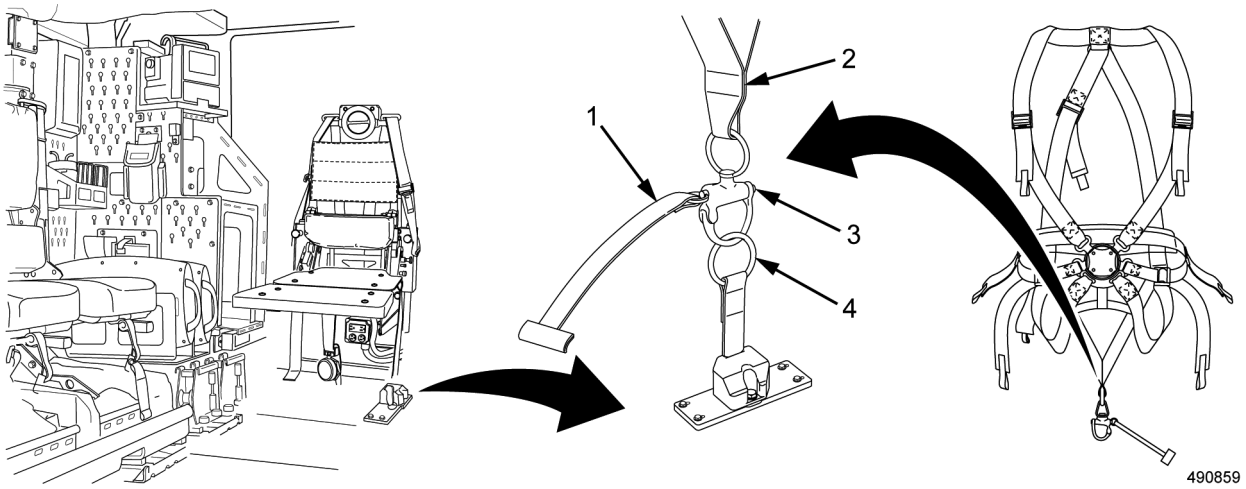


Figure 1. IGRS Emergency Release.

1. Pull emergency pull strap (Figure 1, Item 1) to release IGRS pelican quick release clip (Figure 1, Item 3) from floor retractor (Figure 1, Item 4).
2. If IGRS pelican quick release clip (Figure 1, Item 3) is damaged, and gunner cannot disconnect from floor retractor (Figure 1, Item 4), use seat belt cutter to cut lower tail strap (Figure 1, Item 2).

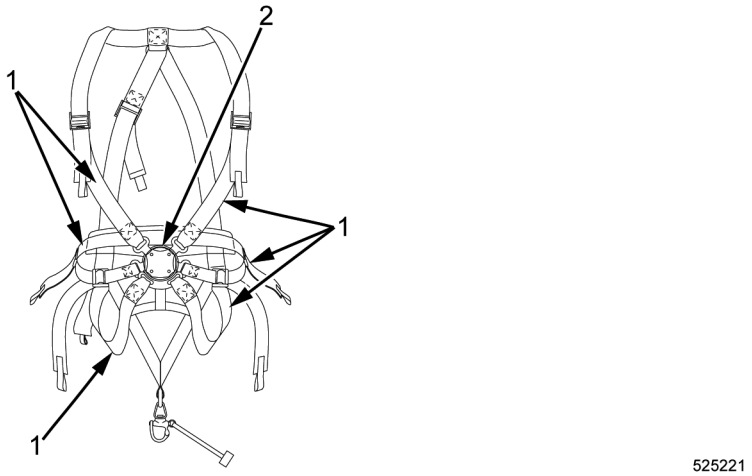


Figure 2. IGRS Rotary Buckle and Straps.

3. If IGRS rotary buckle (Figure 2, Item 2) malfunctions, use seat belt cutter to cut IGRS straps (Figure 2, Item 1).

END OF WORK PACKAGE

.

CREW MAINTENANCE

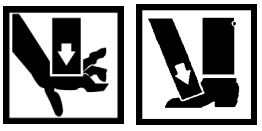
EMERGENCY OPERATION - REAR DOOR/RAMP EMERGENCY RELEASE

INITIAL SETUP:

NOT APPLICABLE

Rear Door/Ramp Emergency Release

WARNING



Never touch any part of a hydraulic assembly before ensuring system is depressurized. The rear door/ramp actuating system operates under high pressure. Pressurized hydraulic fluid can penetrate skin and body tissue. Contact with pressurized hydraulic fluid requires prompt medical attention, even if an injury is not evident. Failure to comply may result in serious injury, amputation, or death to personnel.

CAUTION

Damage to vehicle may occur when rear door/ramp free falls.

NOTE

Hydraulic pressure needs to be released from rear door/ramp hydraulic cylinder before emergency release lock pin is removed.

EMERGENCY OPERATION - REAR DOOR/RAMP EMERGENCY RELEASE - (CONTINUED)

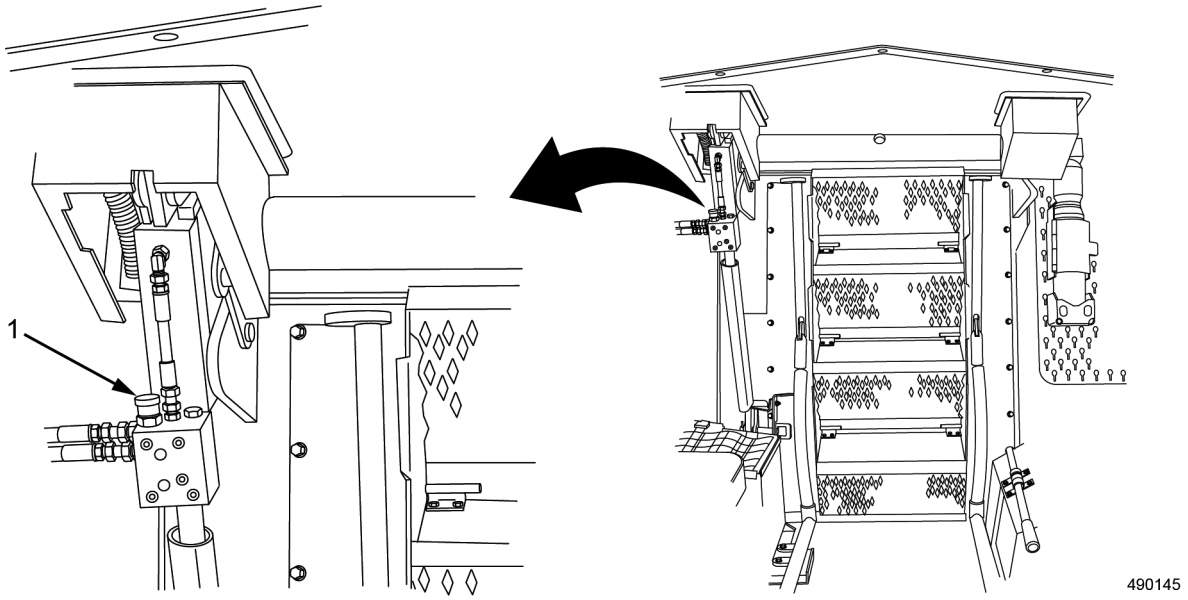


Figure 1. Releasing Hydraulic Pressure.

1. Turn knob (Figure 1, Item 1) counterclockwise approximately two revolutions to depressurize hydraulic system.

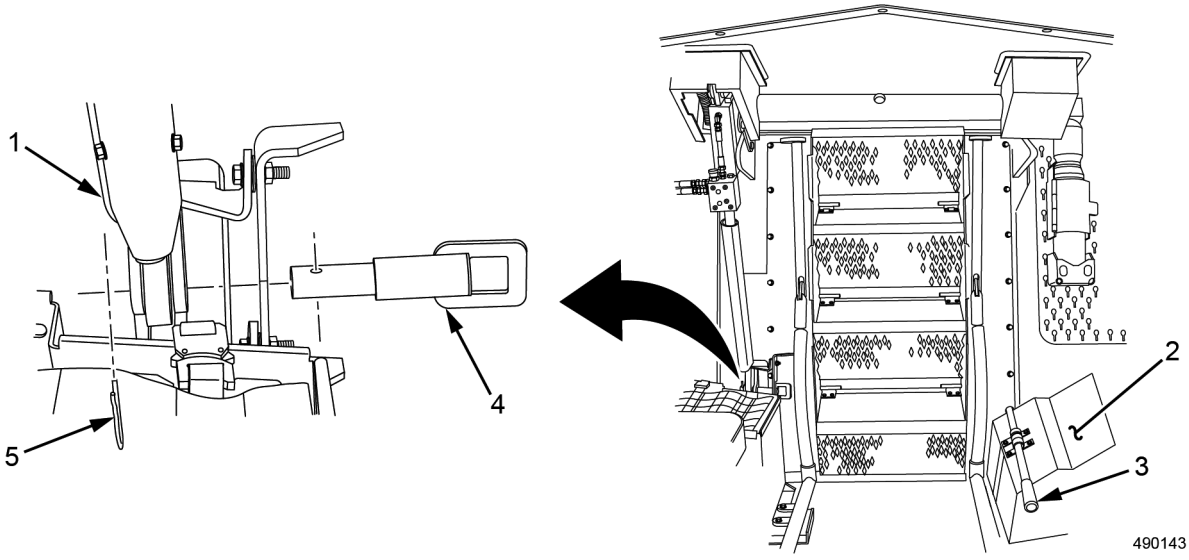


Figure 2. Bridge Pin, Lock Pin, and Pump Handle.

2. Remove bridge pin (Figure 2, Item 5) from lock pin (Figure 2, Item 4).
3. Remove lock pin (Figure 2, Item 4) from lower connection point of main hydraulic cylinder (Figure 2, Item 1).
4. Remove pump handle (Figure 2, Item 3) from side of hydraulic pump cover (Figure 2, Item 2).

EMERGENCY OPERATION - REAR DOOR/RAMP EMERGENCY RELEASE - (CONTINUED)

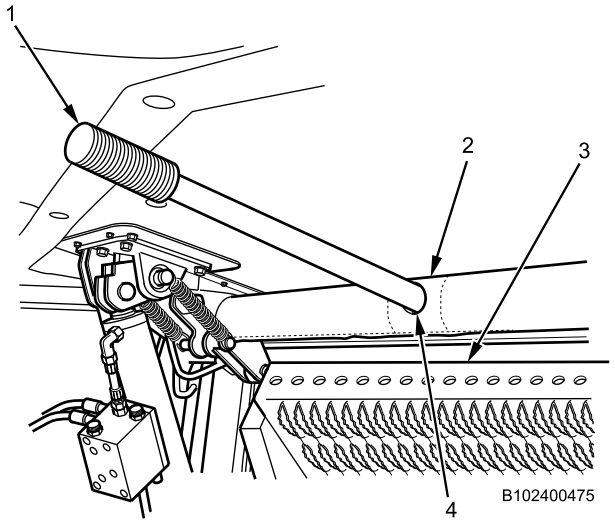
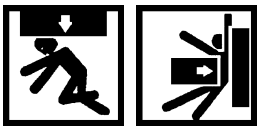


Figure 3. Rear Door/Ramp Locker Shaft and Pump Handle.

WARNING



Ensure no one is behind vehicle when lowering rear door/ramp. Use extreme caution when using emergency rear door/ramp release, to ensure no one is struck by door as it falls open. Sound horn before lowering rear door/ramp. Do not operate rear door/ramp when vehicle is in motion. Failure to comply may result in serious injury or death to personnel.

5. Place pump handle (Figure 3, Item 1) in hole (Figure 3, Item 4) on rear door/ramp locker shaft (Figure 3, Item 2).
6. Pull down on pump handle (Figure 3, Item 1) and hold to unlock rear door/ramp (Figure 3, Item 3).
7. Push rear door/ramp (Figure 3, Item 3) to open.

END OF WORK PACKAGE

.

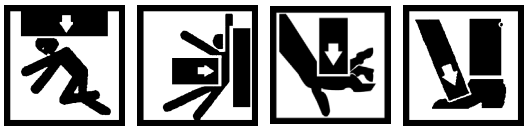
CREW MAINTENANCE

EMERGENCY OPERATION - EMERGENCY HATCH (ROOF)

INITIAL SETUP:

NOT APPLICABLE

WARNING



Emergency hatch is heavy. Ensure hatch is properly secured in both the open or closed position. Do not operate vehicle with emergency hatch open. Ensure that all body parts and gear are clear before closing emergency hatch. Failure to comply may result in serious injury or death to personnel.

Emergency hatch is spring-assisted. If spring should fail, hatch is heavy. DO NOT release spring tension. Failure to comply may result in serious injury or death to personnel.

EMERGENCY OPERATION - EMERGENCY HATCH (ROOF) - (CONTINUED)

Emergency Hatch Open

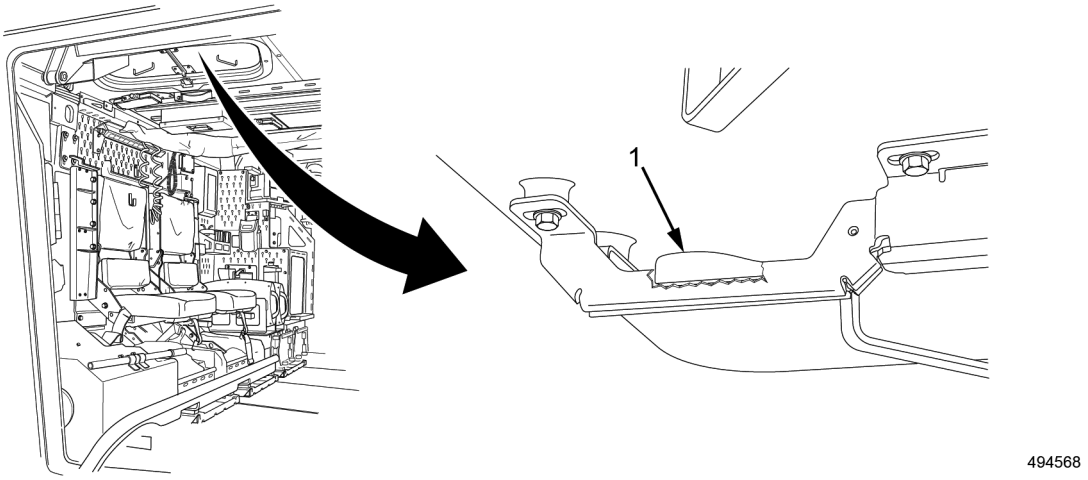


Figure 1. Emergency Hatch Handle Latch Lever (Shown from Inside Vehicle).

NOTE

Emergency hatch is spring-loaded to assist opening.

1. Press handle latch lever (Figure 1, Item 1) to release latch (Figure 2, Item 1).

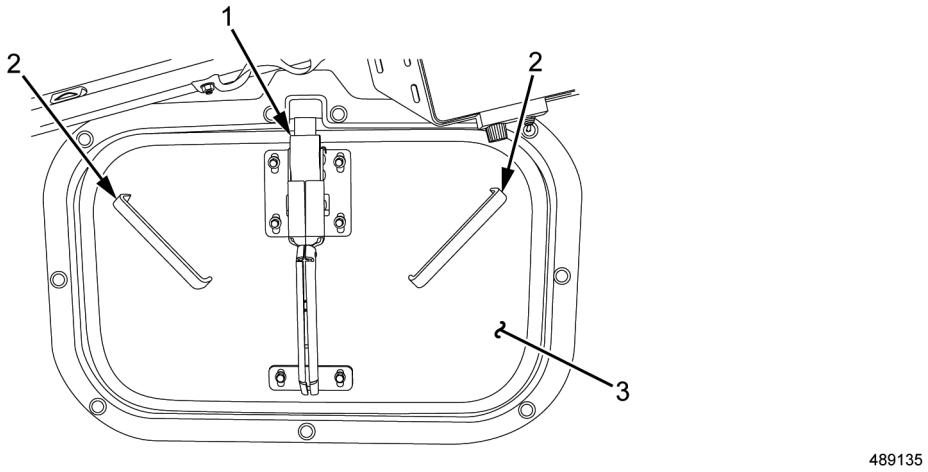


Figure 2. Emergency Hatch.

2. Push emergency hatch handles (Figure 2, Item 2) up until emergency hatch (Figure 2, Item 3) is locked in the up position.

EMERGENCY OPERATION - EMERGENCY HATCH (ROOF) - (CONTINUED)

Emergency Hatch Close

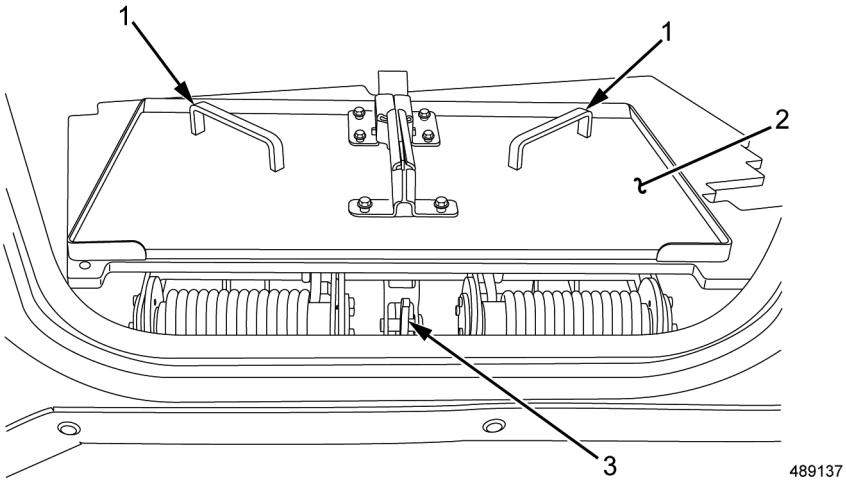


Figure 3. Emergency Hatch Release Lever.

1. Close emergency hatch (Figure 3, Item 2) by lifting up release lever (Figure 3, Item 3) while supporting emergency hatch with emergency hatch handles (Figure 3, Item 1).
2. Pull emergency hatch (Figure 3, Item 2) down with emergency hatch handles (Figure 3, Item 1) until secured with latch. Latch will automatically latch.

END OF WORK PACKAGE

.

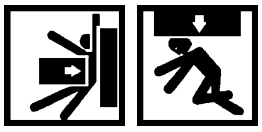
CREW MAINTENANCE

EMERGENCY OPERATION - FLAT TIRE

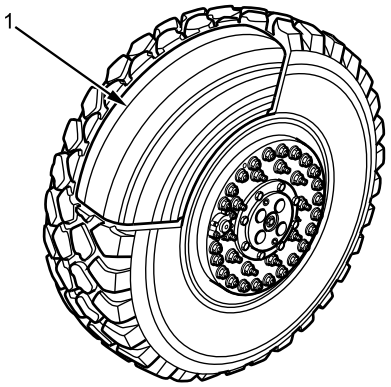
INITIAL SETUP:

NOT APPLICABLE

WARNING



Do not drive the vehicle farther than 30 miles (48 km) or exceed speeds of 30 mph (40 kph) while operating on the run flat inserts. Vehicle control is greatly reduced. Reduce vehicle speed and loading, especially when travelling on secondary roads, cross-country, or in high-traffic areas. Failure to comply may cause a tire fire or loss of vehicle control, which may result in serious injury or death to personnel and/or damage to equipment.



X101300291

Figure 1. Central Tire Inflation System (CTIS) Tire with Run Flat.

NOTE

CTIS cover removed from figure for clarity.

1. If a tire (Figure 1, Item 1) cannot maintain operating air pressure, cautiously operate vehicle at a maximum speed of 30 mph (48 kph) for a maximum distance of 30 miles (48 km).

END OF WORK PACKAGE

.

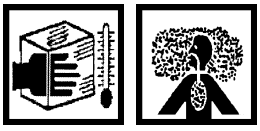
CREW MAINTENANCE

EMERGENCY OPERATION - PORTABLE FIRE EXTINGUISHER

INITIAL SETUP:

Materials/Parts
Extinguisher, fire (WP 0108, Item 20)

WARNING



Replace portable fire extinguisher immediately after use, even if only partly used. Failure to comply may result in serious injury or death to personnel.

Exposure to dry chemical fire extinguisher may result in temporary breathing difficulty during and immediately after discharge. If possible, discharge fire extinguisher from outside cab. Ventilate cab thoroughly prior to reentry. If respiratory irritation or distress occurs, move victim to fresh air. Seek medical attention if irritation persists. Failure to comply may result in serious injury to personnel.

Extinguisher will be extremely cold after discharging and can freeze skin. Avoid contact with chemical agent and do not touch extinguisher after use. Failure to comply may result in serious injury to personnel.

NOTE

Vehicle is equipped with two portable fire extinguishers.

EMERGENCY OPERATION - PORTABLE FIRE EXTINGUISHER - (CONTINUED)

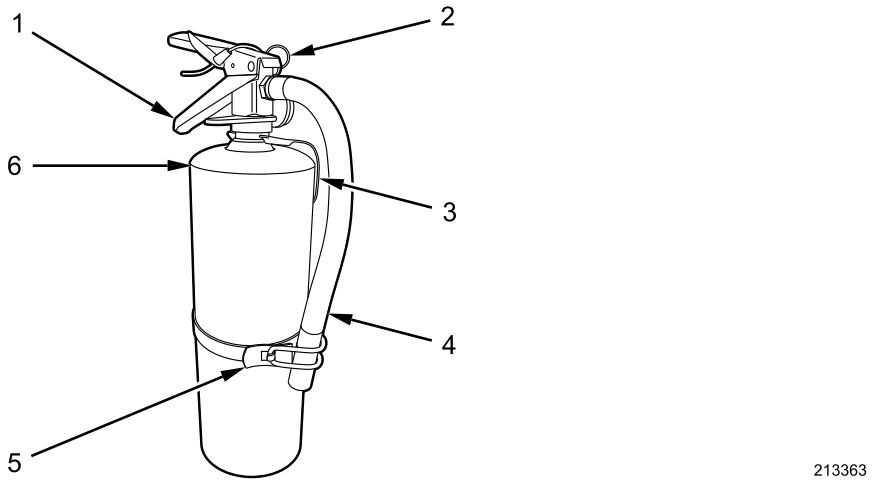


Figure 1. Portable Fire Extinguisher and Bracket.

1. While supporting portable fire extinguisher (Figure 1, Item 6), release latch (Figure 1, Item 5).
2. Remove portable fire extinguisher (Figure 1, Item 6) from bracket (Figure 1, Item 3).

NOTE

Pulling pin releases a locking mechanism and will allow discharge of portable fire extinguisher contents.

3. Pull pin (Figure 1, Item 2) from top of portable fire extinguisher (Figure 1, Item 6).
4. Aim hose (Figure 1, Item 4) at base of fire and slowly squeeze lever (Figure 1, Item 1).
5. Using a sweeping motion, move hose (Figure 1, Item 4) back and forth until fire is completely extinguished.
6. Replace pin (Figure 1, Item 2) in portable fire extinguisher (Figure 1, Item 6) and turn extinguisher in to Field Level Maintenance at first opportunity for replacemant.

END OF WORK PACKAGE

.

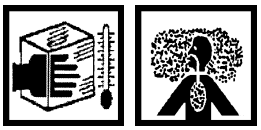
CREW MAINTENANCE

EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS)

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

WARNING



Exposure to dry chemical fire extinguisher may result in temporary breathing difficulty during and immediately after discharge. If possible, discharge fire extinguisher from outside cab. Ventilate and wash cab thoroughly prior to reentry. If respiratory irritation or distress occurs, move victim to fresh air. Seek medical attention if irritation persists. Failure to comply may result in serious injury to personnel.

Extinguisher will be extremely cold after discharging and can freeze skin. Avoid contact with chemical agent and do not touch extinguisher after use. Failure to comply may result in serious personal injury.

Ensure optical fire sensors are kept clean. If optical fire sensors are not kept clean, the Automatic Fire Extinguishing System (AFES) may not properly function in the event of a fire. Failure to comply may result in serious injury to personnel.

Do not drop or strike Fire Suppression System (FSS) or AFES extinguishers. Extinguisher can discharge accidentally and chemical agent can escape through holes in side of anti-recoil plug. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

FSS and AFES extinguishers can move violently when discharging. Ensure extinguisher is properly secured during use. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Do not disturb the pyrotechnic actuator and pressure switch; this will cause the extinguisher to discharge automatically. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

NOTE

The AFES and FSS control boxes are located in the center of the Instrument Panel (IP).

The AFES is an automatic fire extinguishing system that covers the cabin and engine compartments. It can be operated manually in case of a malfunction of the automatic system.

The FSS is a manual fire suppression system that covers the tire and fuel tank. It can only be operated manually.

EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS) - (CONTINUED)

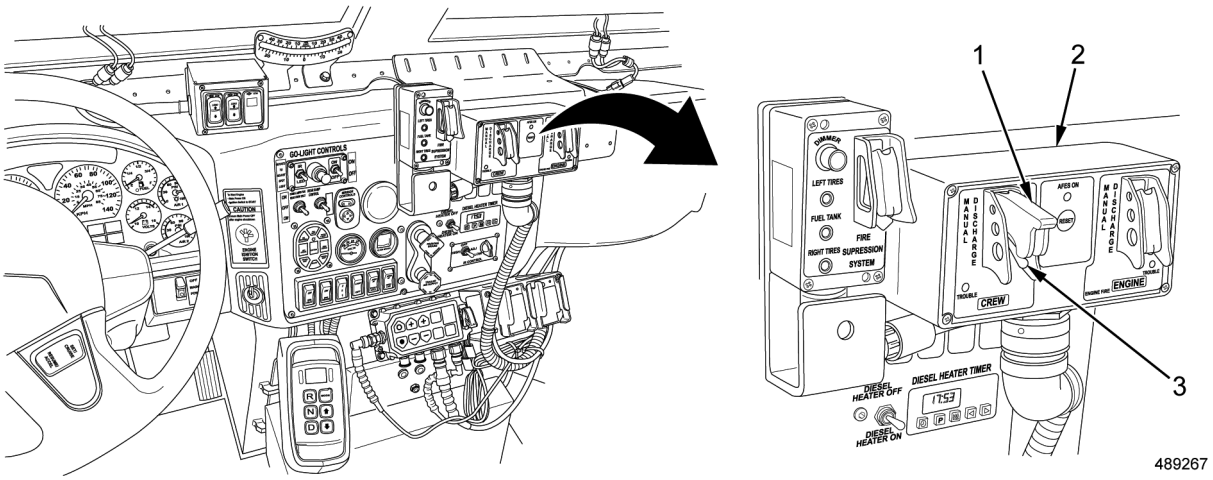


Figure 1. AFES Control Switches.

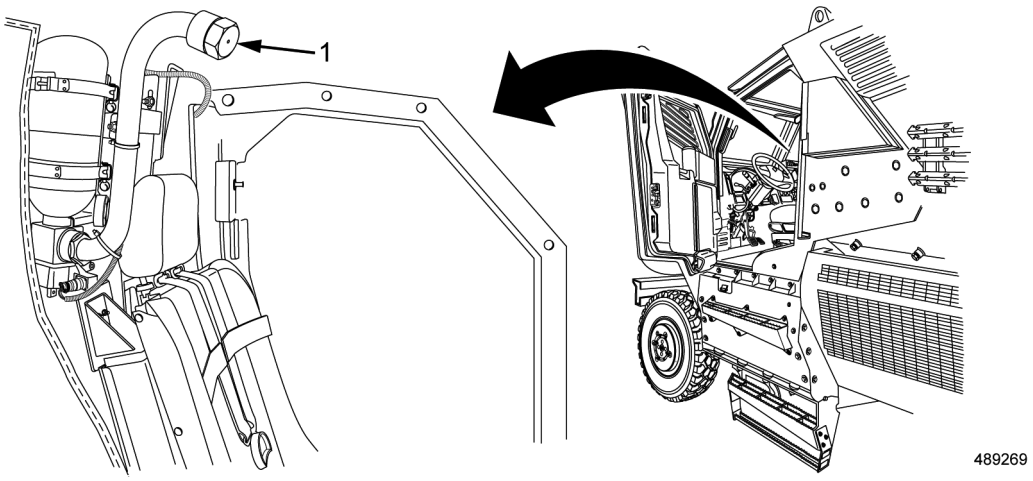


Figure 2. Front Passenger Area AFES Nozzle.

EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS) - (CONTINUED)

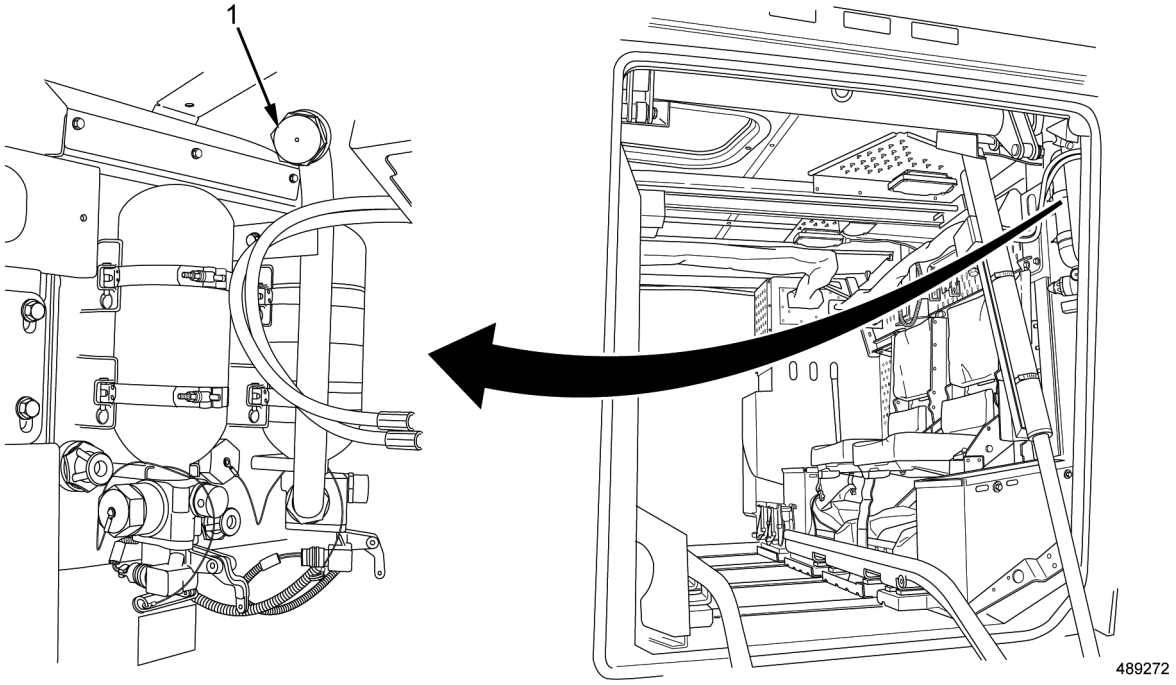


Figure 3. Rear Passenger Area AFES Nozzle.

NOTE

The AFES can be activated only once automatically or manually without charging.

1. Lift CREW switch cover (Figure 1, Item 1) on AFES control panel (Figure 1, Item 2) and push toggle switch (Figure 1, Item 3) up to activate front crew area AFES nozzles (Figure 2, Item 1) and rear passenger area AFES nozzles (Figure 3, Item 1).

EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS) - (CONTINUED)

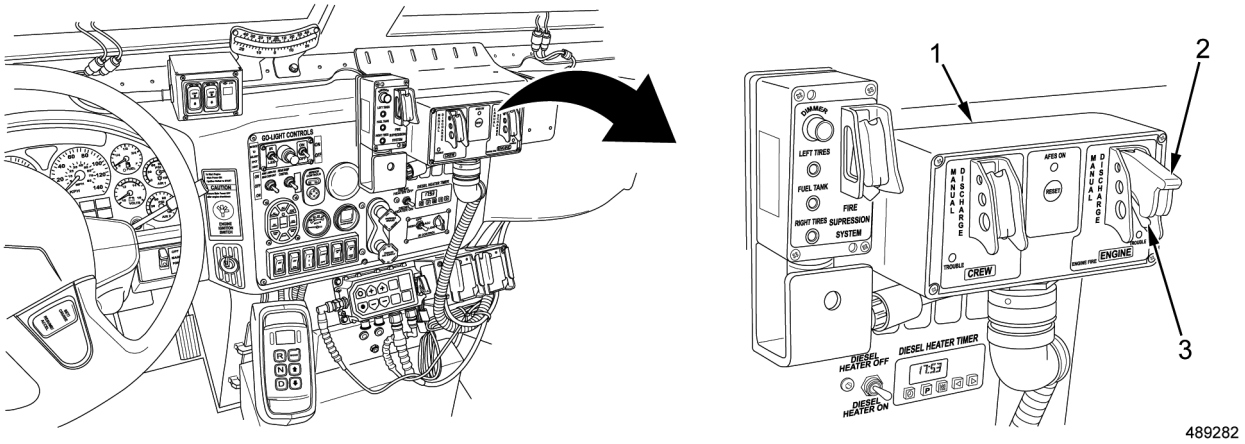


Figure 4. AFES Control Switches.

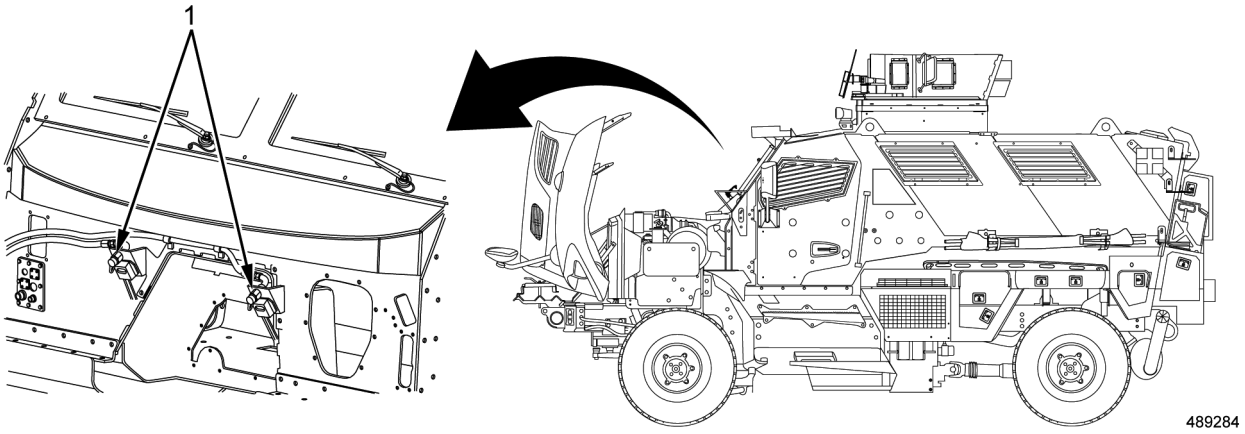


Figure 5. Engine AFES Nozzles at Bulkhead.

EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS) - (CONTINUED)

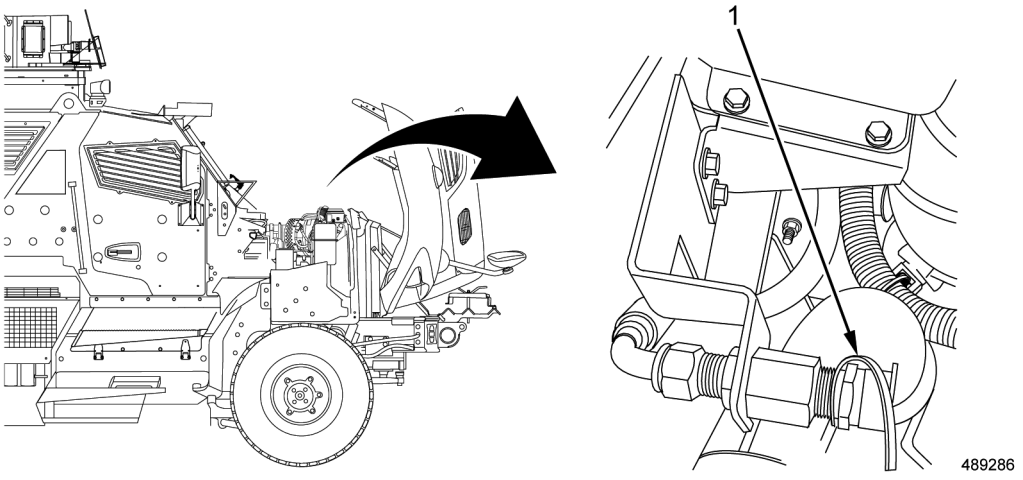


Figure 6. Engine AFES Nozzles at Alternator.

2. Lift ENGINE switch cover (Figure 4, Item 2) on AFES control panel (Figure 4, Item 1) and push toggle switch (Figure 4, Item 3) up to activate engine AFES nozzles at bulkhead (Figure 5, Item 1) and AFES nozzle at alternator (Figure 6, Item 1).

EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS) - (CONTINUED)

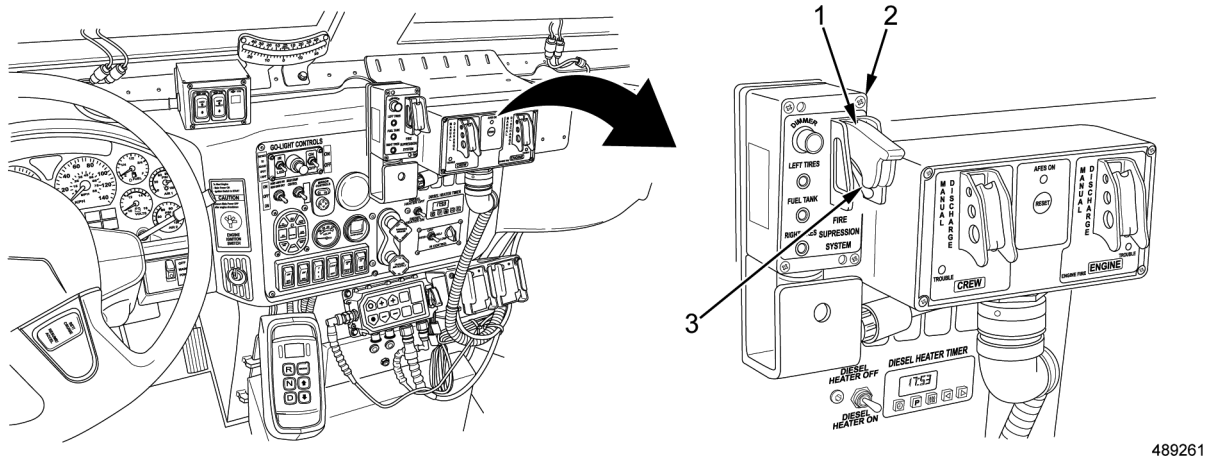


Figure 7. FSS/AFES Control Switches.

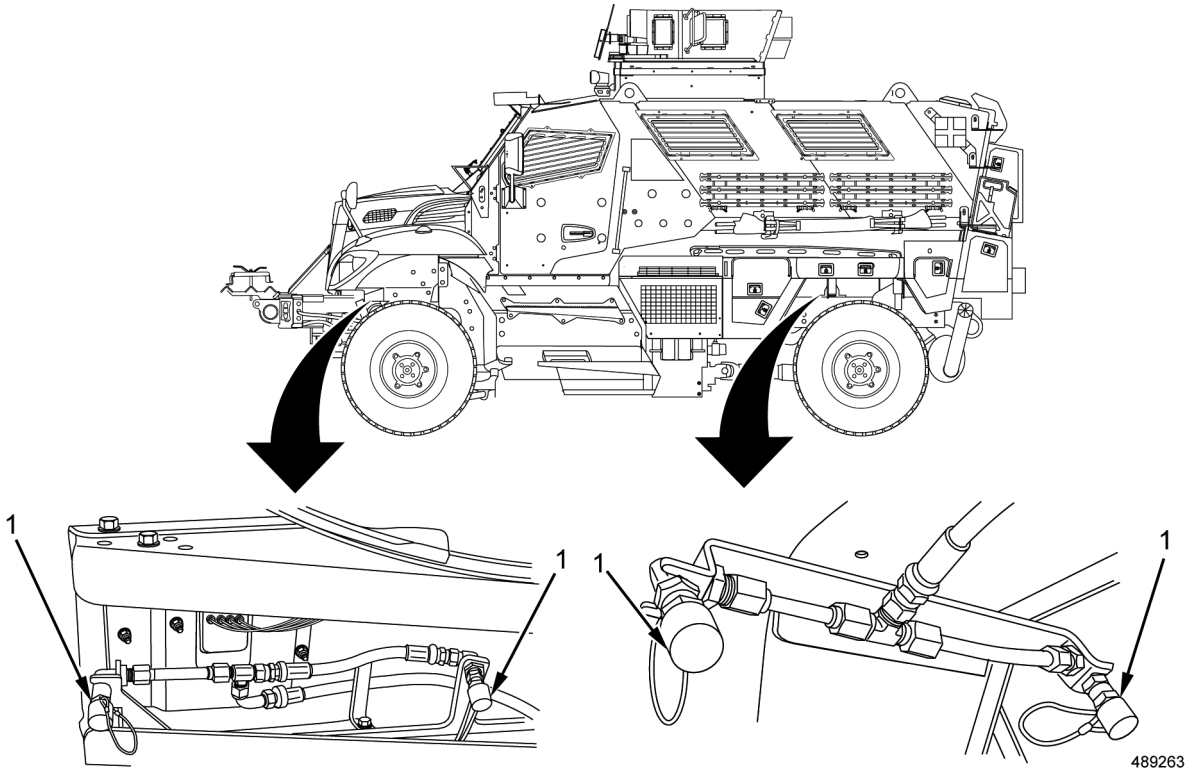


Figure 8. Tire FSS Nozzles.

EMERGENCY OPERATION - AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES)/FIRE SUPPRESSION SYSTEM (FSS) - (CONTINUED)

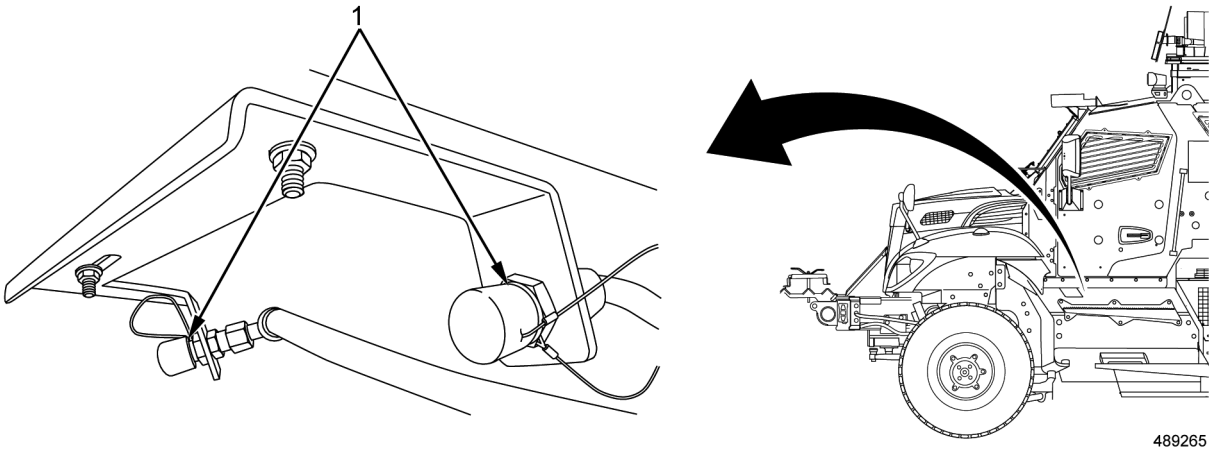


Figure 9. Fuel Tank FSS Nozzles.

NOTE

Driver side FSS tire nozzles shown; commander side tire FSS nozzles similar.

The FSS can be activated only once without recharging.

3. Lift FIRE SUPPRESSION SYSTEM switch cover (Figure 7, Item 1) on FSS control panel (Figure 7, Item 2) and push toggle switch (Figure 7, Item 3) up to activate right and left tire FSS nozzles (Figure 8, Item 1) and fuel tank FSS nozzles (Figure 9, Item 1).
4. Notify Field Level Maintenance that system was discharged.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - VEHICLE EMERGENCY EGRESS (VEE) WINDOW OPERATION

INITIAL SETUP:

Tools and Special Tools

Cutter cable, vehicle mounted (WP 0108, Item 17)

WARNING

Each Vehicle Emergency Egress (VEE) window weighs 287 lb (130 kg). Use caution when removing VEE window. If vehicle is on its side, remove the window furthest from the ground first (top window). Failure to comply may result in serious injury or death to personnel.

When egressing the vehicle through the window opening, removal of personal gear may be required. If necessary, personnel should egress with their gear in hand while in tactical conditions. Failure to comply may result in serious injury or death to personnel.

NOTE

This procedure pertains to both VEE windows with and without Rocket Propelled Grenade (RPG) nets installed.

For vehicles with RPG nets installed, seat belt cutter may be required to egress.

Driver side shown; commander side similar.

EMERGENCY OPERATION - VEHICLE EMERGENCY EGRESS (VEE) WINDOW OPERATION - (CONTINUED)

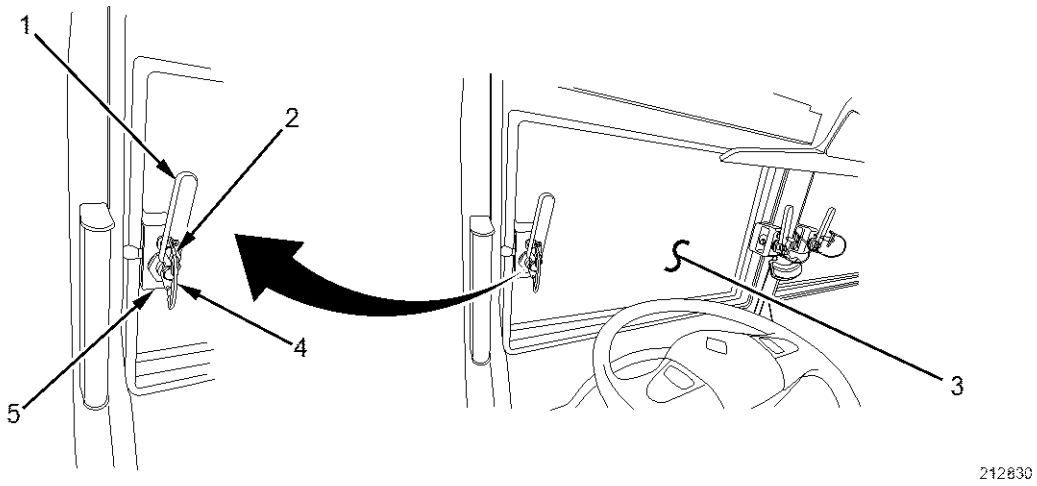


Figure 1. Vehicle Emergency Egress (VEE) Window.

1. Press button (Figure 1, Item 4) in while pulling pin (Figure 1, Item 2) from latch (Figure 1, Item 5).
2. Repeat step 1 for opposite side of window (Figure 1, Item 3).
3. Rotate inboard and outboard handles (Figure 1, Item 1) inward.
4. Kick top of VEE window (Figure 1, Item 3) away from vehicle.
5. Exit vehicle through window opening.
6. Repeat steps 1 through 5 for opposite window, if necessary.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - SLAVE STARTING VEHICLE

INITIAL SETUP:

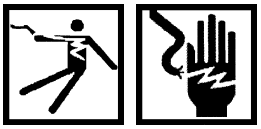
Materials/Parts
Cable assembly, power, electrical (WP 0109)

References
WP 0004

WP 0011
WP 0013
WP 0020
WP 0048

Starting Using Outside Power Source

WARNING



Use extreme caution when testing or working on or around electrical circuits. Always assume that electrical circuits are live. Electrical shock can occur upon contact with voltage high enough to cause current flow through muscles or nerves. On Direct Current (DC) systems, generally 1 milliamp (mA) of current can be felt, 5 mA can cause severe pain, 15 mA can cause loss of muscle control, and 70 mA can be fatal. Wear protective clothing; ensure skin, clothing, and surrounding areas are dry; do not wear jewelry; and touch only the insulated, nonmetallic parts of electrical components and testing equipment. To prevent electrical arcing, avoid shorting electrical test probes and jumper wires. Electrical arcing can cause bright flashes of light, capable of causing temporary blindness. If electrical injury occurs, immediately shut off power supply and seek medical assistance. Failure to comply may result in serious injury or death to personnel.

EMERGENCY OPERATION - SLAVE STARTING VEHICLE - (CONTINUED)

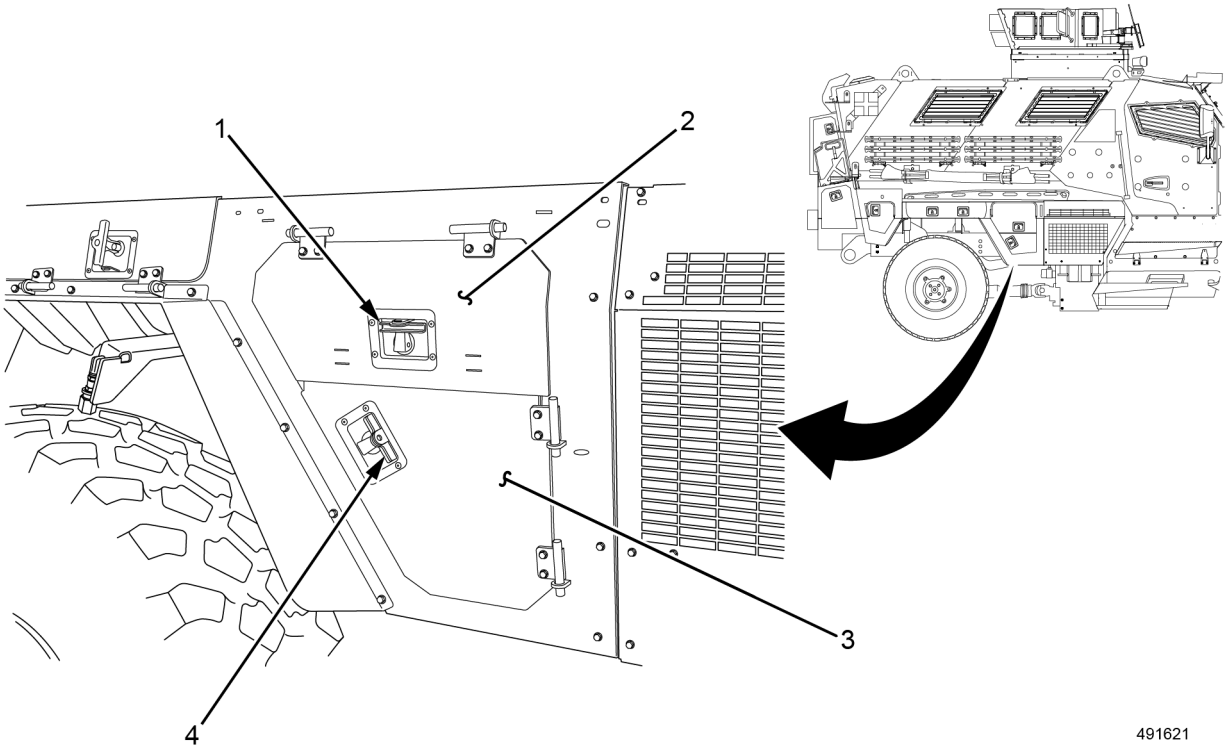


Figure 1. Storage Box Doors Open.

1. Position enabled vehicle close enough to open upper stowage box door (Figure 1, Item 2) and lower stowage box door (Figure 1, Item 3) while still able to move safely between disabled vehicle and enabled vehicle.
2. Pull out latch handle (Figure 1, Item 1) and turn counterclockwise to open upper stowage box door (Figure 1, Item 2).
3. Pull out latch handle (Figure 1, Item 4) and turn counterclockwise to open lower stowage box door (Figure 1, Item 3).

EMERGENCY OPERATION - SLAVE STARTING VEHICLE - (CONTINUED)

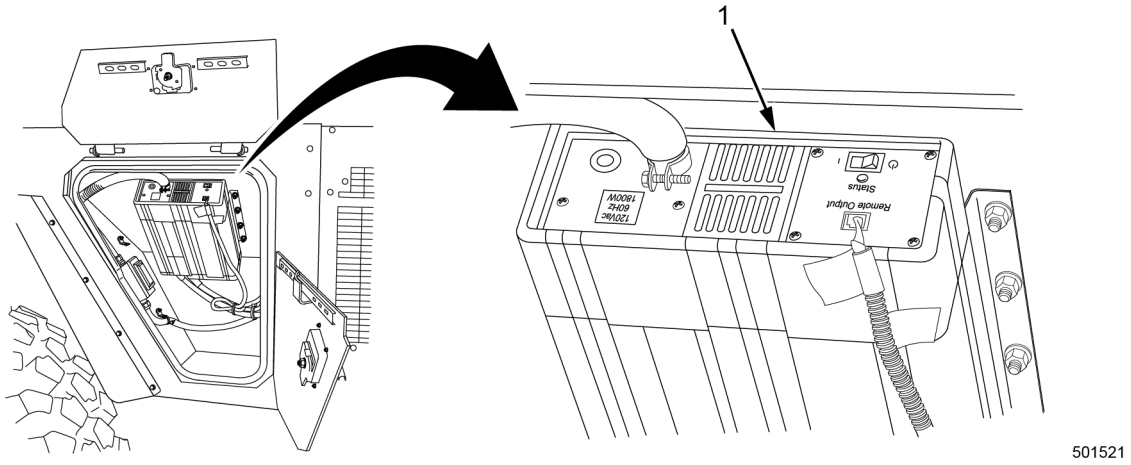


Figure 2. 110V Power Inverter.

4. Turn off 110V power inverter (Figure 2, Item 1).
5. Turn off lights, radios, and any other electrical equipment that might cause a spark while connecting slave cable to disabled vehicle and enabled vehicle. Refer to WP 0004, Description and Use of Operator Controls and Indicators and WP 0020, 110V Outlets and Power Inverter.
6. Turn ignition switch to OFF on enabled vehicle and disabled vehicle. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

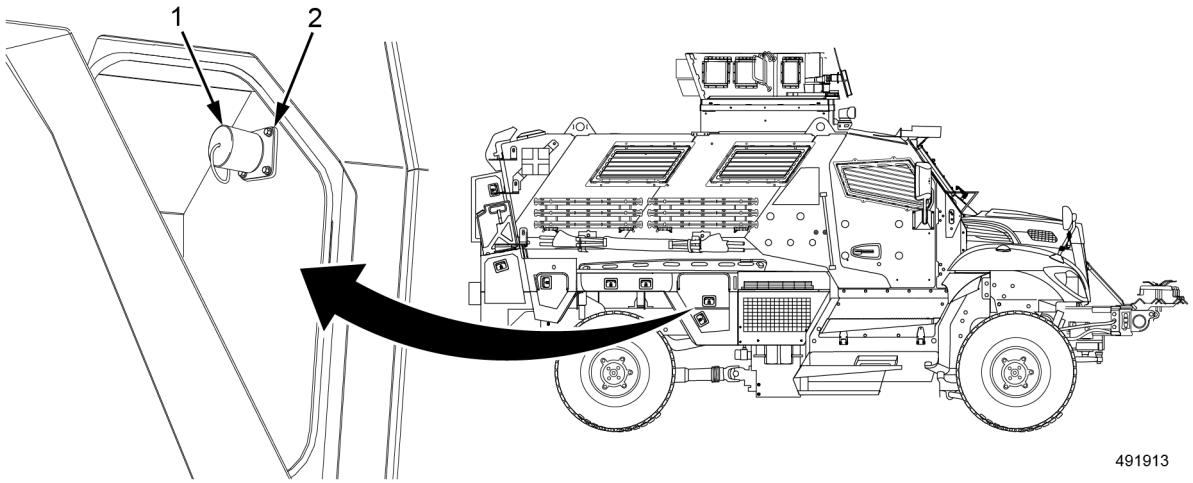


Figure 3. Slave Receptacle Cap Removal.

7. Locate slave receptacle (Figure 3, Item 2) on both enabled and disabled vehicle, and remove protective cap (Figure 3, Item 1).

EMERGENCY OPERATION - SLAVE STARTING VEHICLE - (CONTINUED)

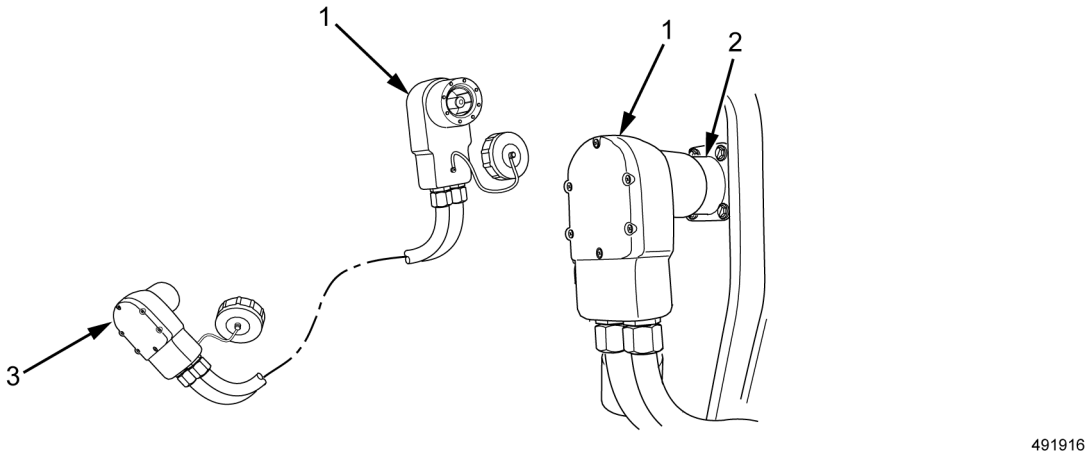


Figure 4. Slave Receptacle and Cable.

8. Connect slave cable (Figure 4, Item 3) to slave receptacle (not shown) on disabled vehicle.
9. Connect slave cable (Figure 4, Item 1) to slave receptacle (Figure 4, Item 2) on enabled vehicle.

NOTE

Duration of charging time will vary according to condition of both vehicle's charging systems.

10. Start enabled vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure Above 32°F (0°C).
11. Run enabled vehicle at 1200 - 1500 rpm before attempting to start disabled vehicle. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.
12. Start disabled vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure Above 32°F (0°C).
13. When disabled vehicle is running smoothly, disconnect slave cable (Figure 4, Item 1) from enabled vehicle and disabled vehicles.

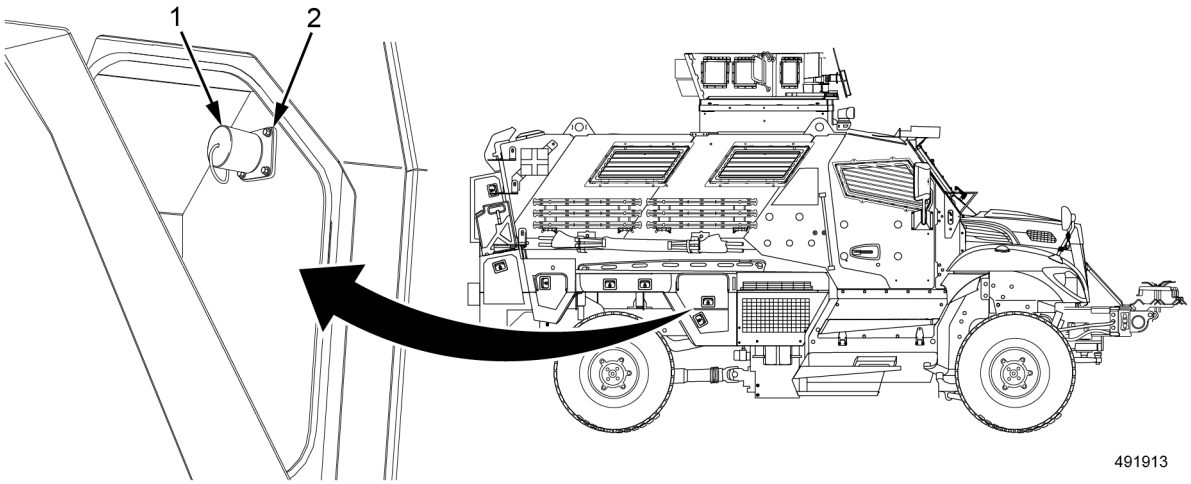


Figure 5. Slave Receptacle Cap Installation.

14. Install protective cap (Figure 5, Item 1) on slave receptacle (Figure 5, Item 2).

EMERGENCY OPERATION - SLAVE STARTING VEHICLE - (CONTINUED)

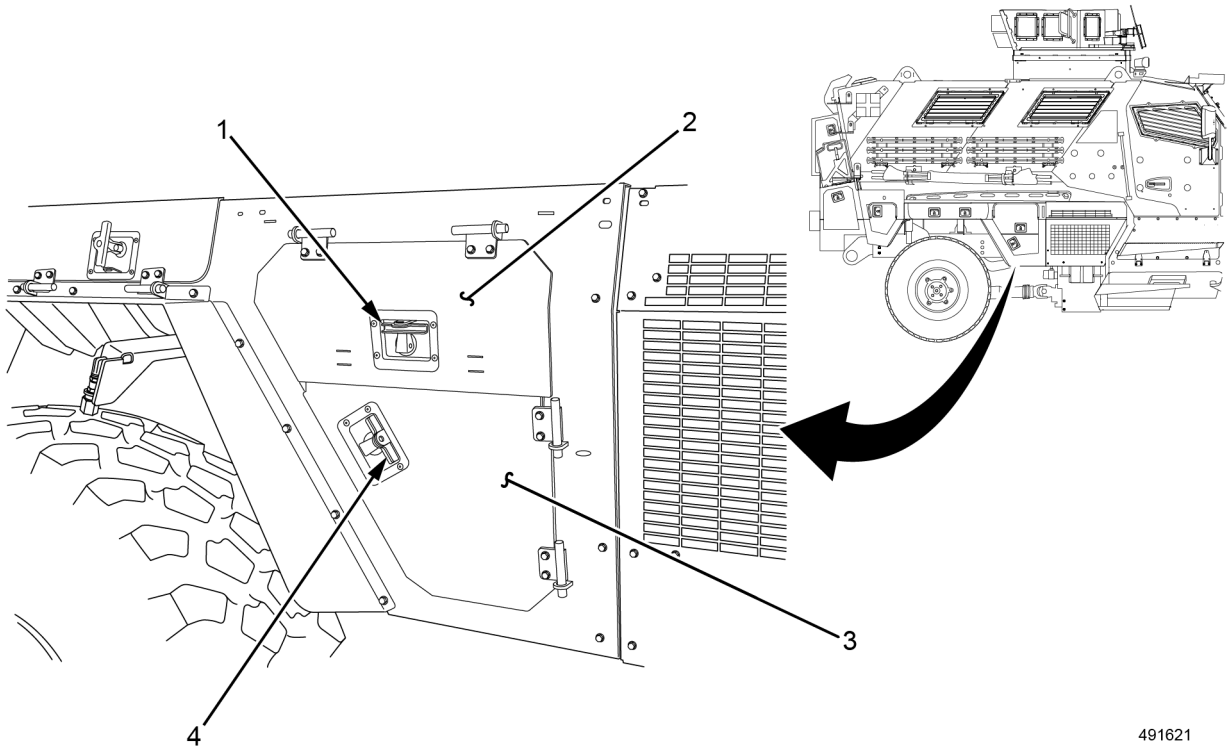


Figure 6. Stowage Box Doors Closed.

15. Turn on 110V power inverter. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.
16. Close lower stowage door (Figure 6, Item 3) and turn latch handle (Figure 6, Item 4) clockwise to secure stowage door.
17. Close upper stowage door (Figure 6, Item 2) and turn latch handle (Figure 6, Item 1) clockwise to secure stowage door.
18. Push two latch handles (Figure 6, Item 1 and 4) in to resting position.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - TRANSMISSION PROCEDURES (LIMP MODE)

INITIAL SETUP:

References
WP 0011
WP 0012
WP 0013
WP 0016
WP 0069

LIMP Mode

WARNING

When operating a vehicle with the transmission in LIMP mode; DO NOT rely on the parking brake to hold the vehicle in place with the engine running and the transmission in gear. The operator service brakes must also be applied. Failure to comply may result in injury or death to personnel.

Locked gears may limit vehicle speed or prohibit vehicle from ascending grades and traversing certain terrains. Failure to comply may result in injury or death to personnel.

CAUTION

When the CHECK TRANS light is ON and the transmission gear selector display window flashes, the transmission will stay in the last gear selected and cannot be shifted to another gear. No further gear selections are possible. Do not shift into NEUTRAL (N) if CHECK TRANS indicator light comes on. Vehicle may be rendered inoperable. Depending on which gear transmission is locked into, vehicle may not be able to drive up steep grades. Failure to comply may result in damage to equipment.

Depending on which gear transmission is locked into, vehicle may not be able to drive up steep grades.

If the vehicle overheats while in LIMP mode, the operator should stop the vehicle (do not turn engine OFF) and allow transmission and engine to cool down to normal operating range. If overheated engine or transmission does not cool down or if overheating reoccurs, the operator should stop the vehicle and turn engine OFF and notify Field Level Maintenance immediately. Failure to comply may result in damage to equipment.

EMERGENCY OPERATION - TRANSMISSION PROCEDURES (LIMP MODE) - (CONTINUED)

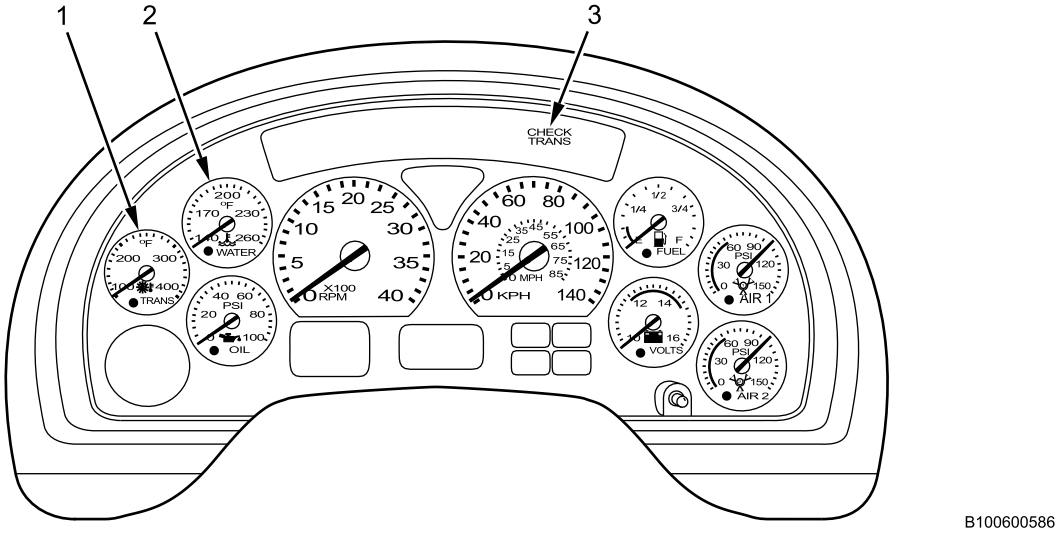


Figure 1. TRANS Temperature Gauge, WATER Temperature Gauge, and CHECK TRANS Light.

NOTE

When the CHECK TRANS light illuminates, the transmission gear selector display window will also flash showing the gear the transmission is locked into. This indicates that the transmission is in LIMP mode.

1. Apply service brakes to stop vehicle.
2. Place transmission gear selector in REVERSE (R) and note if vehicle transmission shifts. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.

Transmission Shifts Into REVERSE (R)

NOTE

Normal operating range for the TRANS temperature gauge and WATER temperature gauge is between 180 and 220°F (82 and 104°C). RED indicator lights will illuminate when the WATER temperature gauge exceeds 230°F (110°C) or TRANS temperature gauge exceeds 250°F (121°C).

1. If transmission shifts into REVERSE (R), place transmission gear selector in DRIVE (D) and continue with mission. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedure.
2. Operator must monitor the WATER temperature gauge (Figure 1, Item 2) and TRANS temperature gauge (Figure 1, Item 1) to ensure engine and transmission do not overheat. Refer to WP 0069, Emergency Operation - Operating Vehicle During Engine Overheating.
3. Notify Field Level Maintenance when mission is complete.

EMERGENCY OPERATION - TRANSMISSION PROCEDURES (LIMP MODE) - (CONTINUED)

Transmission Does Not Shift Into REVERSE (R)

NOTE

If transmission does not shift into REVERSE (R), transmission may be locked into a specific gear and may not shift out of gear, even if engine is shut down.

1. Do not shut down engine until decision is made to render vehicle non-mission capable. If transmission is locked into gear and engine cannot be turned OFF, operator cannot leave cabin until the engine is shut down.
2. When engine is shut down, vehicle will be rendered non-mission capable and inoperable until problem is corrected.
3. If vehicle is rendered non-mission capable, notify Field Level Maintenance.

Transmission Shifts, CHECK TRANS Light Remains ON

1. If vehicle shifts normally and CHECK TRANS light (Figure 1, Item 3) remains on, shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
2. Wait 15 seconds.
3. Restart engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
4. If CHECK TRANS light (Figure 1, Item 3) does not stay on, fault has cleared and vehicle can be operated normally.
5. If CHECK TRANS light (Figure 1, Item 3) comes on and remains on, shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
6. Notify Field Level Maintenance.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - OPERATING VEHICLE DURING ENGINE OVERHEATING

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

References
WP 0013
WP 0016

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

WARNING

Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.

Keep hands and clothing clear of moving parts in the engine compartment. Rotating parts can cause severe injury to personnel. Ensure that all guards are in place and do not wear loose clothing when conducting maintenance. Always check to ensure that the area is clear of personnel and obstructions before starting the engine. Failure to comply may result in injury or death to personnel.

CAUTION

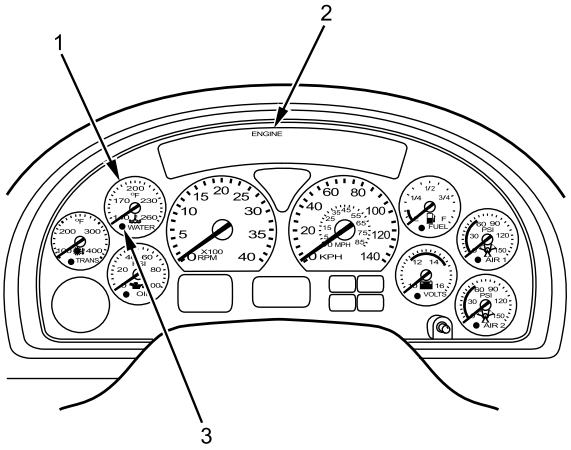
Operating the vehicle with an overheated engine may result in permanent engine damage.

NOTE

The engine coolant temperature has three monitoring systems: WATER temperature gauge RED indicator light, RED ENGINE indicator light, and WATER temperature gauge.

Normal operating range for water temperature is 190° to 205°F (88° – 96°C).

EMERGENCY OPERATION - OPERATING VEHICLE DURING ENGINE OVERHEATING - (CONTINUED)



B100600541

Figure 1. WATER Temperature Gauge and RED Check ENGINE Light.

1. If WATER temperature RED indicator light (Figure 1, Item 3), RED ENGINE light (Figure 1, Item 2), or WATER temperature gauge (Figure 1, Item 1) monitoring system indicates a problem and the other two are operating normally, shift transmission to next lower gear and observe water temperature. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.
2. If one monitoring system continues to indicate a problem, proceed with mission and notify Field Level Maintenance upon completion.
3. If any two of the three monitoring systems indicate a problem, park vehicle and allow engine to idle until water temperature cools down.
4. If water temperature does not go down, shut engine down and notify Field Level Maintenance. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - OPERATING VEHICLE DURING LOSS OF OIL PRESSURE

INITIAL SETUP:

References
WP 0013

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

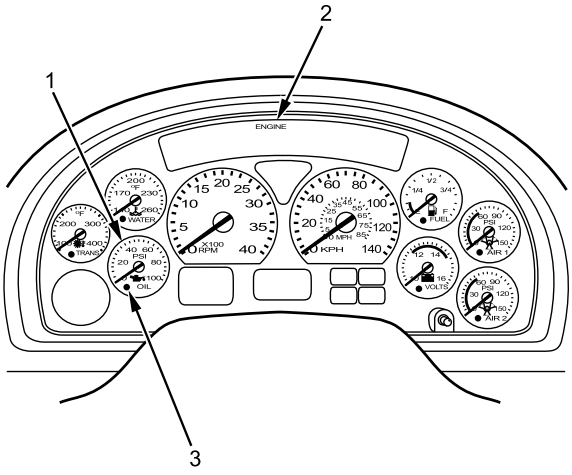
CAUTION

Operating the vehicle after loss of oil pressure can cause permanent engine damage.

NOTE

The engine oil pressure has three monitoring systems: OIL PSI gauge RED indicator light, RED ENGINE light, and OIL PSI gauge.

Normal operating range for oil pressure is 31 to 70 psi (214 to 483 kPa).



B100600542

Figure 1. OIL PSI Gauge, OIL PSI Gauge RED Indicator Light, and RED ENGINE Light.

1. If OIL PSI gauge RED indicator light (Figure 1, Item 3), RED ENGINE light (Figure 1, Item 2), or OIL PSI gauge (Figure 1, Item 1) indicates a problem and the other two are operating normally, proceed with mission and notify Field Level Maintenance upon completion.
2. If any two of the three monitoring systems indicate a problem, park vehicle, shut down engine and notify Field Level Maintenance. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

END OF WORK PACKAGE

.

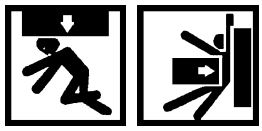
CREW MAINTENANCE

EMERGENCY OPERATION - OPERATING VEHICLE DURING LOSS OF AIR SYSTEM PRESSURE

INITIAL SETUP:

References
WP 0013
WP 0084

WARNING



Do not operate vehicle with air system pressure loss. Vehicle spring brakes will engage if air system pressure is below 45 psi (310 kPa). Rear brakes engaging while vehicle in motion may result in a skid or rollover. Failure to comply may result in death or serious injury to personnel and damage to equipment.

EMERGENCY OPERATION - OPERATING VEHICLE DURING LOSS OF AIR SYSTEM PRESSURE - (CONTINUED)

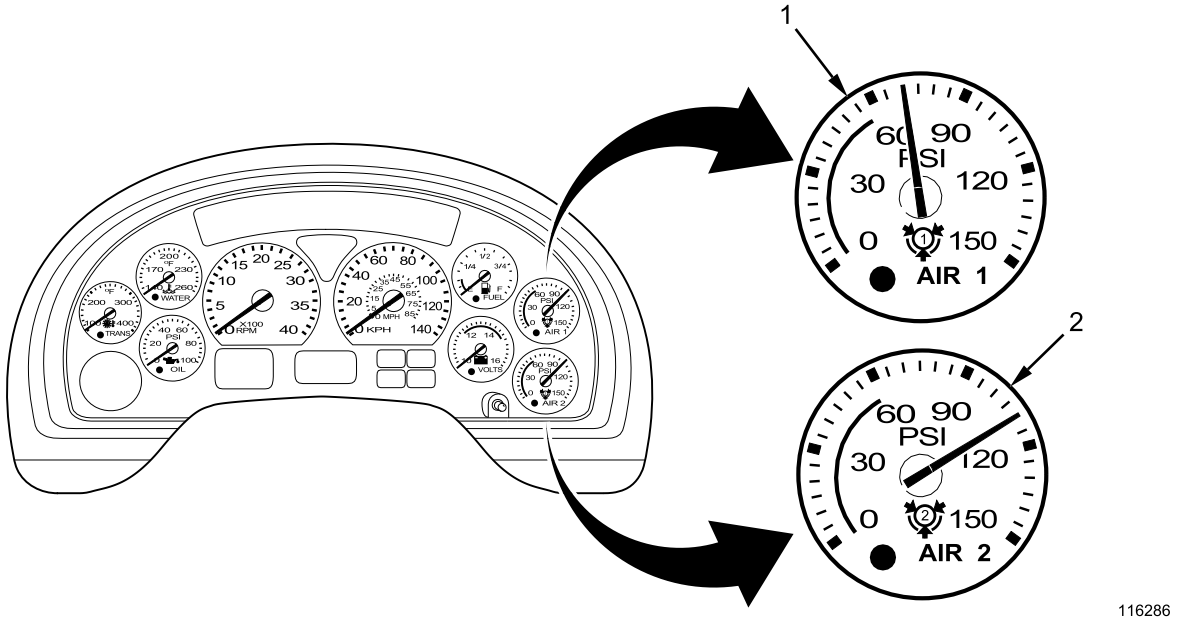


Figure 1. AIR Pressure Gauge #1 and AIR Pressure Gauge #2.

NOTE

Normal air system pressure is 110 to 130 psi (758 to 896 kPa).

Steps 1 and 2 are performed when air system pressure is below 70 psi (483 kPa).

The RED indicator light on either AIR pressure gauge will illuminate when air pressure is less than 70 psi (483 kPa). The under-limit audible alarm will sound if the service drive lights are illuminated.

1. If AIR pressure gauge #1 (Figure 1, Item 1) or AIR pressure gauge #2 (Figure 1, Item 2) indicates air system pressure of 70 psi (483 kPa) or less, remove vehicle from road as quickly and safely as possible.
2. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
3. Perform air pressure system troubleshooting. Refer to WP 0084, Air Pressure System Troubleshooting Procedures.

END OF WORK PACKAGE

.

CREW MAINTENANCE

EMERGENCY OPERATION - ENGINE OUT OF FUEL (RESTART PROCEDURES)

INITIAL SETUP:

Tools and Special Tools
Screwdriver, cross tip # 2 (WP 0108, Item 46)

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)
Rag, wiping (WP 0110, Item 25)

Personnel Required
Crewmember - (2)

References
WP 0011

Equipment Condition
Engine shutdown (WP 0013)
Engine hood opened (WP 0033)
Vehicle fueled (WP 0034)

WARNING

Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with Standard Operating Procedures (SOP). Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Do not fill fuel tank with engine running. Do not overfill fuel tank. Clean fuel spills immediately according to SOP. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

Store diesel fuel in an approved container clearly marked DIESEL FUEL. Dispose of fuel in an approved container clearly marked DIESEL FUEL in accordance with SOP.

Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.

Hood requires two-person lift. Ensure there is adequate space in front of the vehicle to open hood completely without pinning or pinching personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel.

EMERGENCY OPERATION - ENGINE OUT OF FUEL (RESTART PROCEDURES) - (CONTINUED)

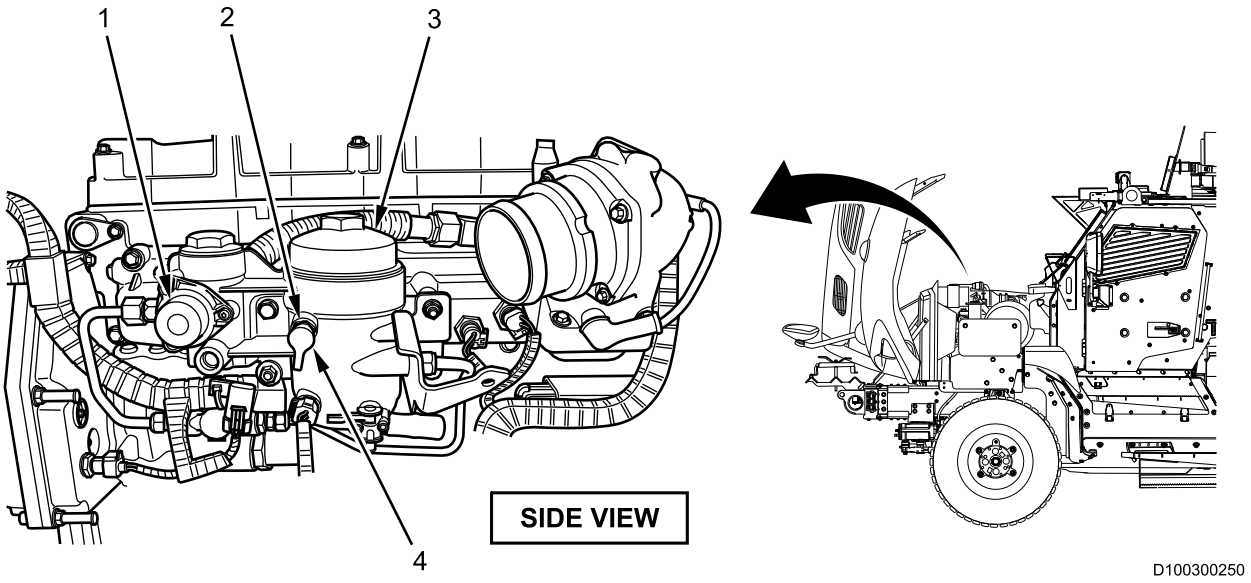


Figure 1. Fuel Bleed Valve and Pump.

NOTE

Air cleaner assembly removed from figure for clarity.

1. Remove dust cap (Figure 1, Item 4) from bleed valve (Figure 1, Item 2) on fuel filter header (Figure 1, Item 3).
2. Place rag under fuel prime bleed valve (Figure 1, Item 2) to collect excess fuel.
3. Press in and hold center stem on bleed valve (Figure 1, Item 2) with screwdriver.
4. Operate priming pump (Figure 1, Item 1) by pushing in and releasing continually until fuel discharges from bleed valve (Figure 1, Item 2).
5. Release center stem of bleed valve (Figure 1, Item 2).
6. Remove fuel soaked rag.
7. Install dust cap (Figure 1, Item 4).
8. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
9. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

Follow-On Maintenance

1. Close engine hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

STOWAGE AND DECAL/DATA PLATE GUIDE

INTRODUCTION

This work package identifies and describes stowage locations, decals, and data plates on M1266A1.

Stowage Guide

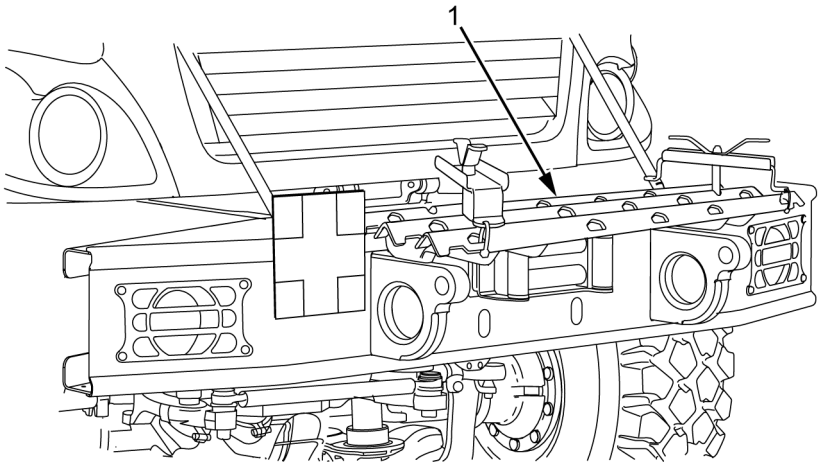


Figure 1. Front Vehicle Stowage.

Rugged All-Purpose Cargo Carrier (RACC) (Figure 1, Item 1) is located on front of vehicle.

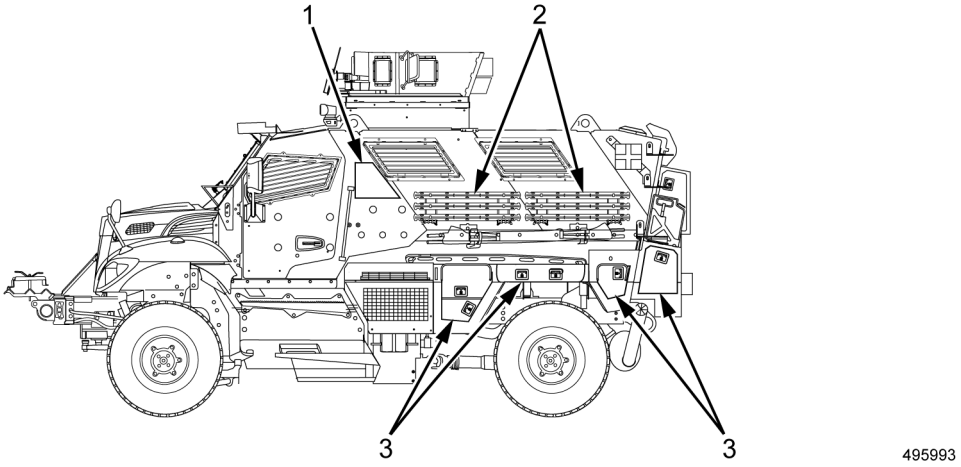


Figure 2. Driver Side Stowage.

Two RACCs (Figure 2, Item 2), four stowage boxes (Figure 2, Item 3), and one stowage bag (Figure 2, Item 1) are located on driver side of vehicle.

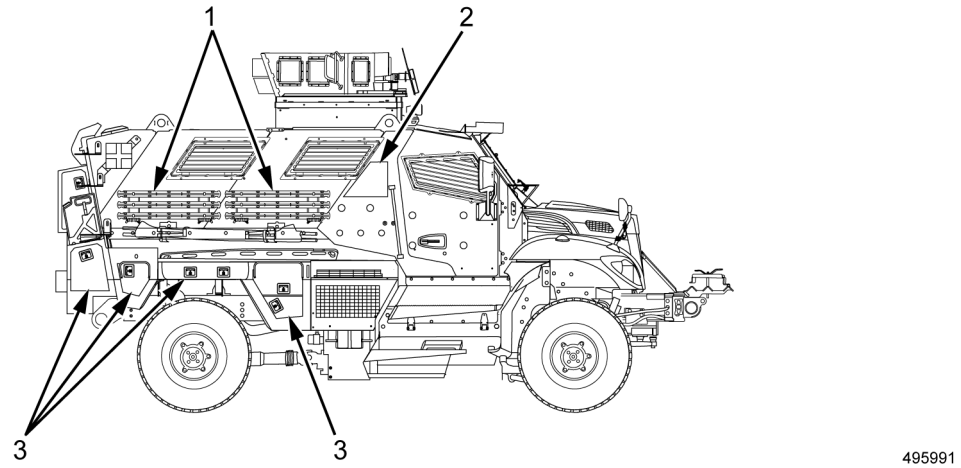


Figure 3. Commander Side Stowage.

Two RACCs (Figure 3, Item 1), four stowage boxes (Figure 3, Item 3), and one stowage bag (Figure 3, Item 2) are located on commander side of vehicle.

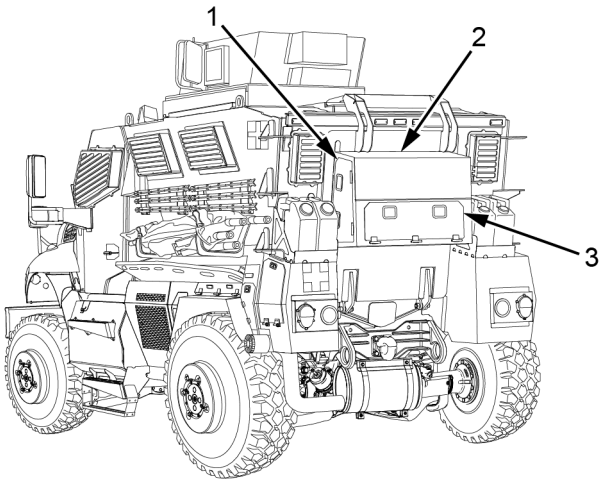


Figure 4. Rear Door/Ramp Stowage Box.

NOTE

Rear door/ramp must be open to access driver/commander side stowage box doors.

Rear door/ramp stowage box (Figure 4, Item 2) is located on vehicle exterior. Open driver side stowage box door (Figure 4, Item 1) or commander side stowage box door (not shown) to access upper and lower compartments. Open rear stowage box door (Figure 4, Item 3) to access lower inner compartment.

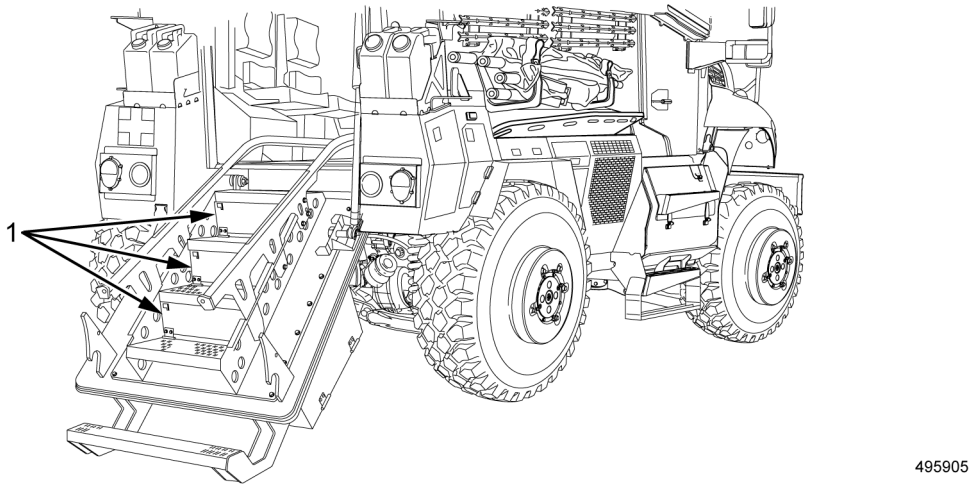


Figure 5. Rear Door/Ramp Internal Storage Bags.

There are three internal storage bags (Figure 5, Item 1) located under the rear door/ramp steps.

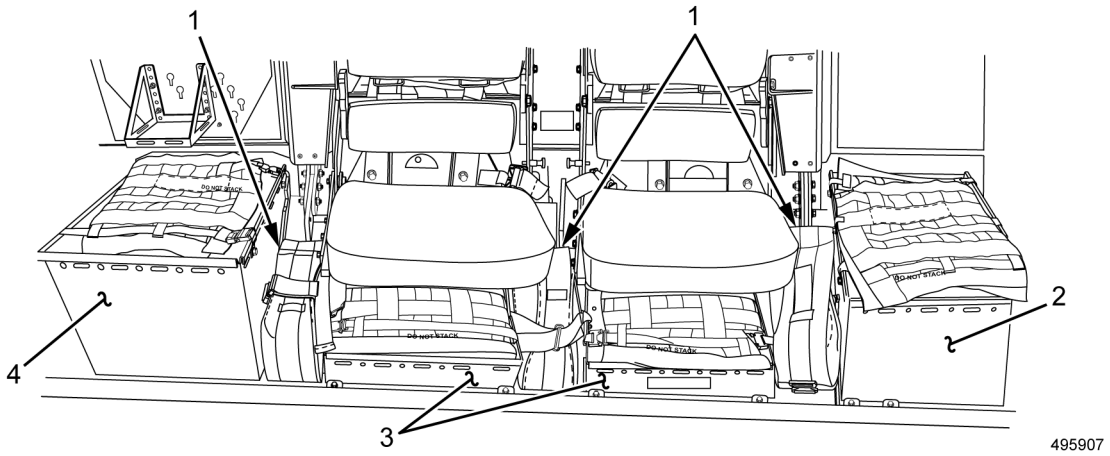


Figure 6. Commander Side Passenger Storage Bags and Medic Supply Storage Boxes.

There are three commander side passenger storage bags (Figure 6, Item 1) and four medical supply storage boxes (Figure 6, Item 2, 3, and 4).

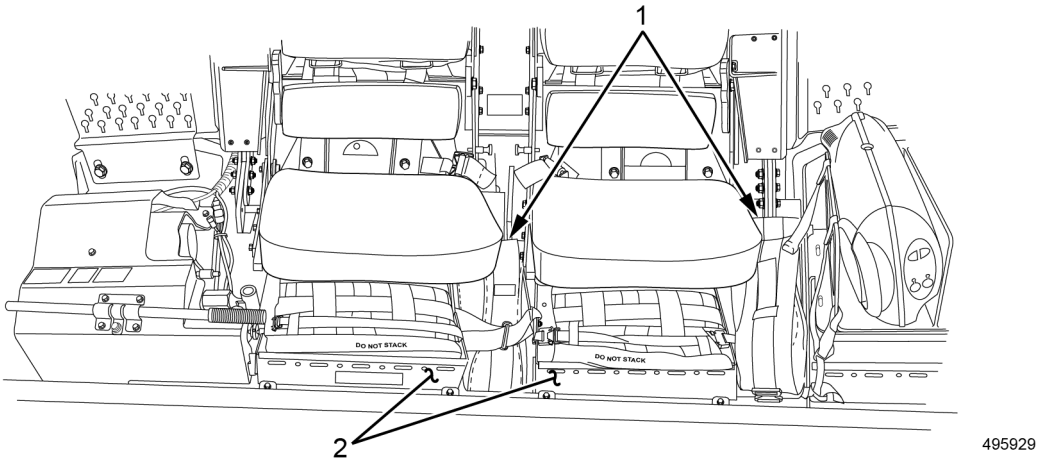


Figure 7. Driver Side Passenger Storage Bags and Medic Supply Storage Boxes.

There are two driver side passenger storage bags (Figure 7, Item 1) and two medical supply storage boxes (Figure 7, Item 2).

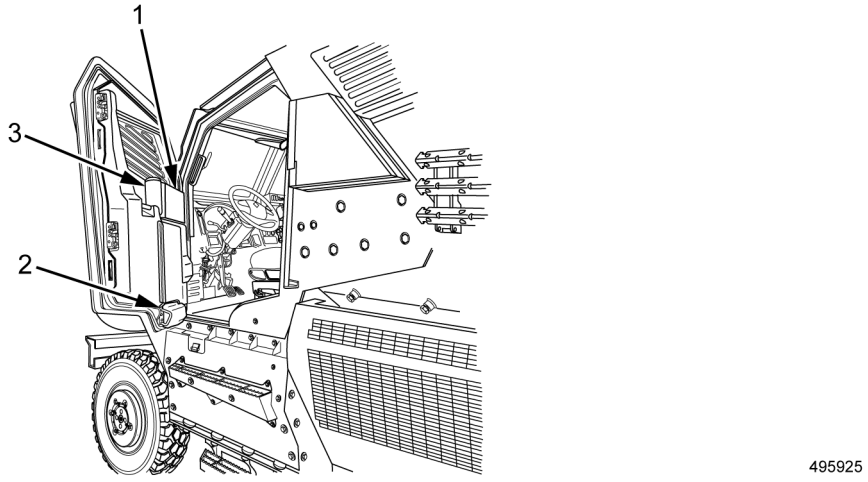


Figure 8. Driver Side Door Storage Bags.

There is one driver side door bottle storage bag (Figure 8, Item 3) and two storage bags (Figure 8, Item 1 and 2).

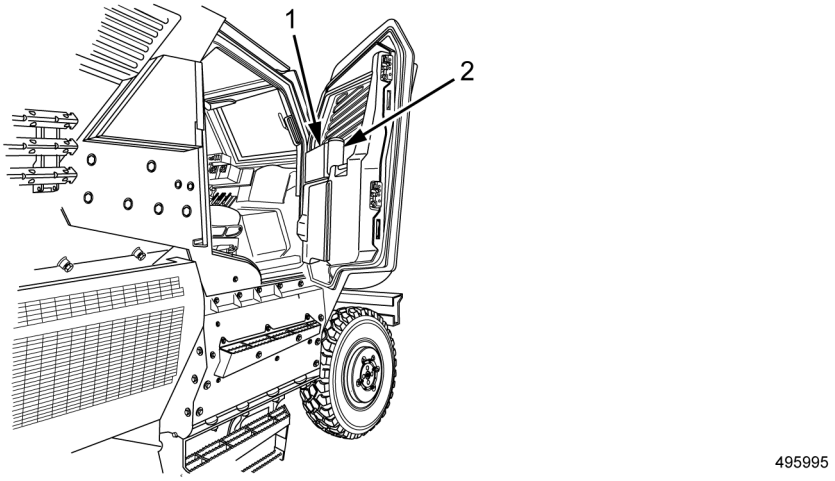


Figure 9. Commander Side Door Storage Bags.

There is one commander side door bottle storage bag (Figure 9, Item 2) and one storage bag (Figure 9, Item 1).

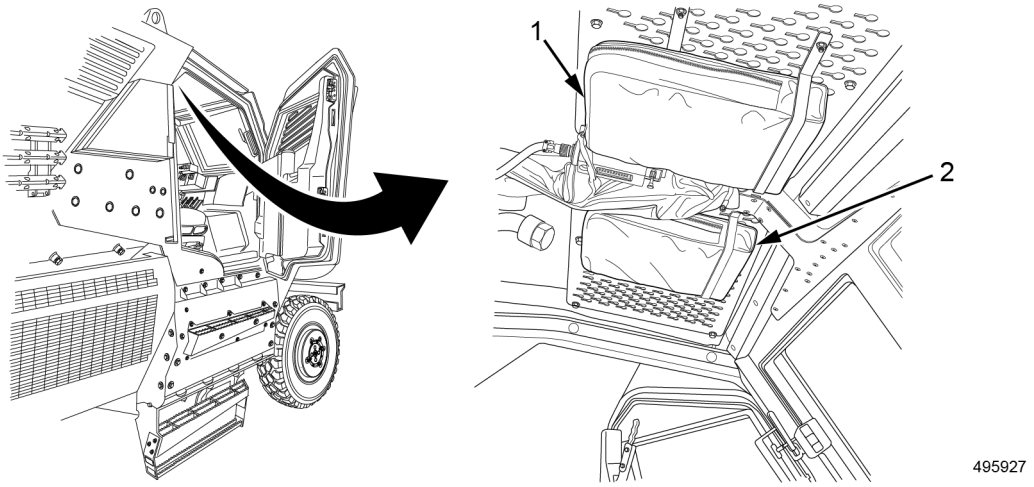


Figure 10. Front Cab Ceiling Storage Bags.

There are two front cab ceiling storage bags (Figure 10, Item 1 and 2).

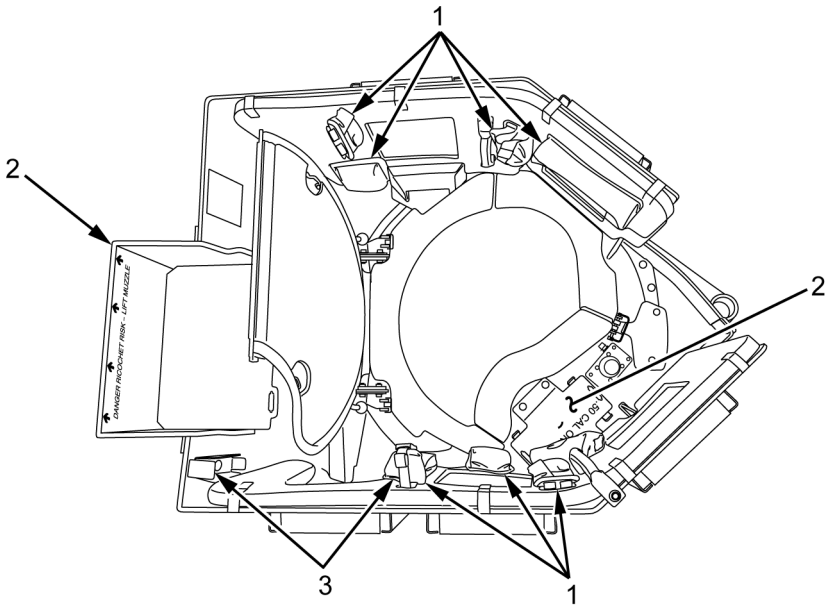


Figure 11. OGPK Stowage Bags and Ammunition Storage .

The Objective Gunners Protection Kit (OGPK) has seven inside stowage bags (Figure 11, Item 1), two locations for ammunition storage (Figure 11, Item 2), and one weapon stowage (Figure 11, Item 3).

DECAL/DATA PLATE GUIDE

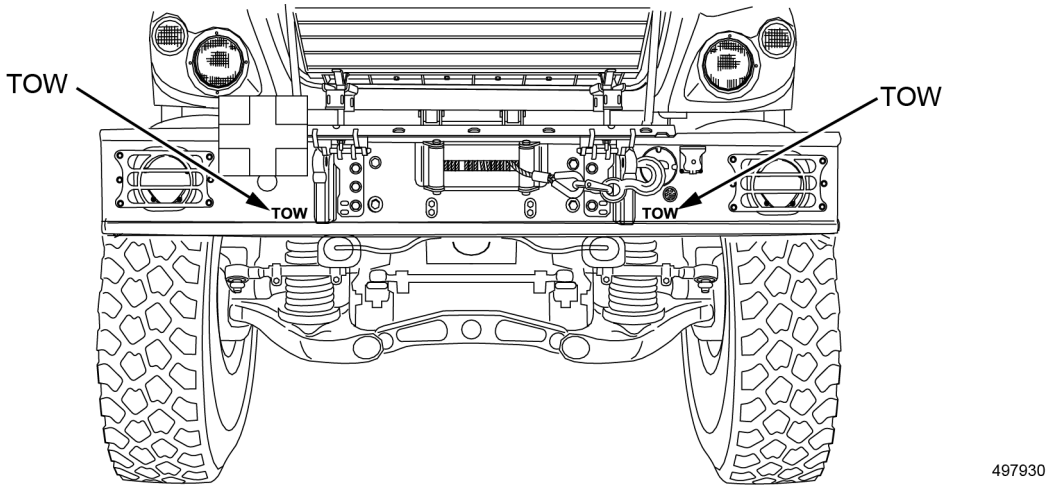


Figure 12. Front Bumper Markings.

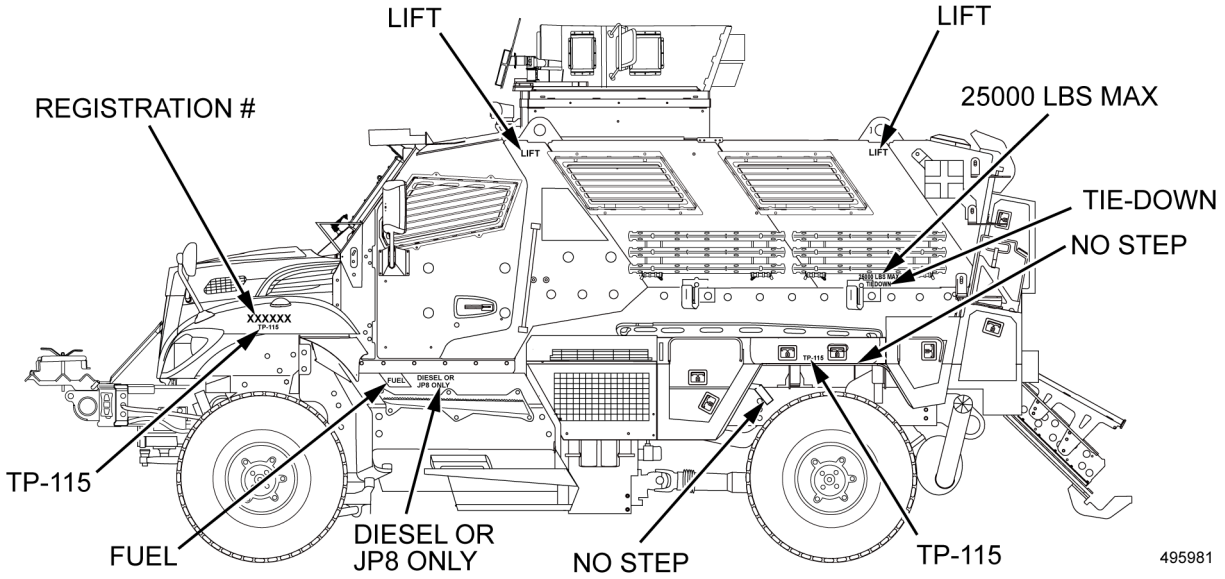


Figure 13. Driver Side Markings.

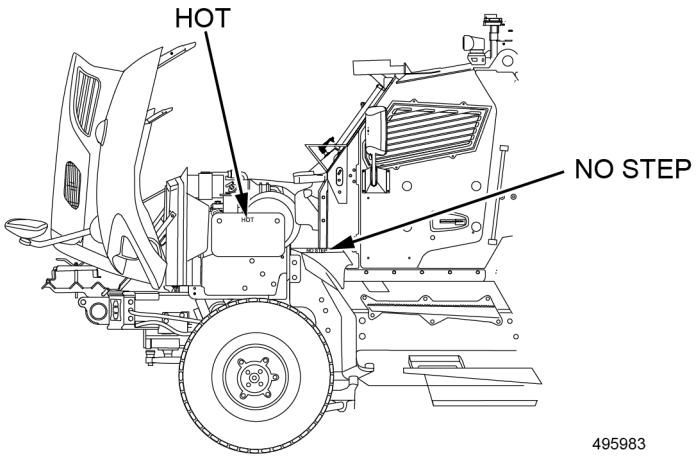


Figure 14. Driver Side Hood Opened Markings.

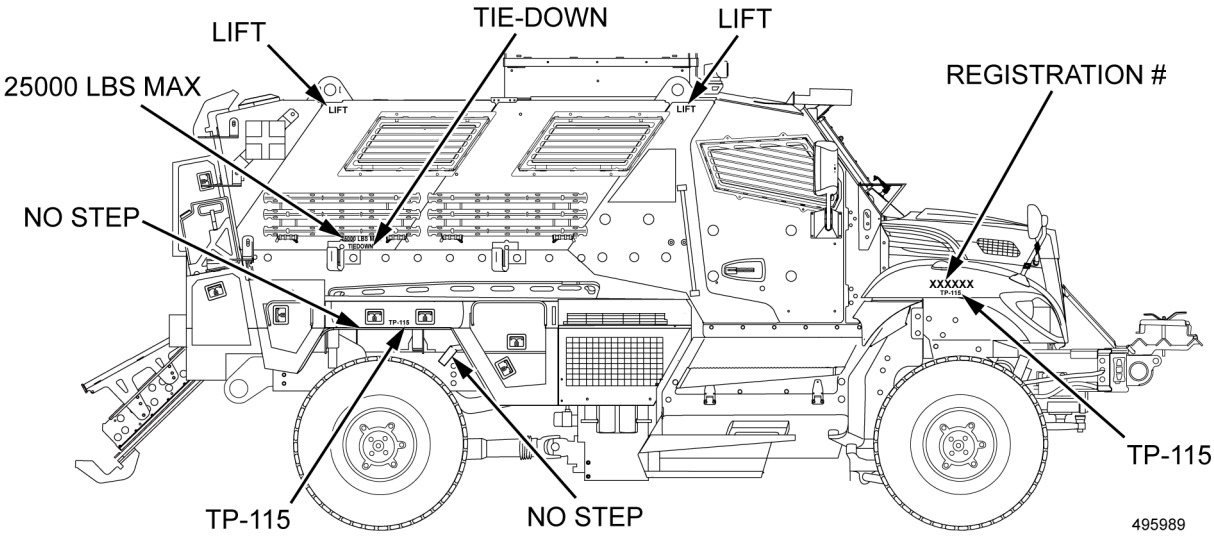


Figure 15. Commander Side Markings.

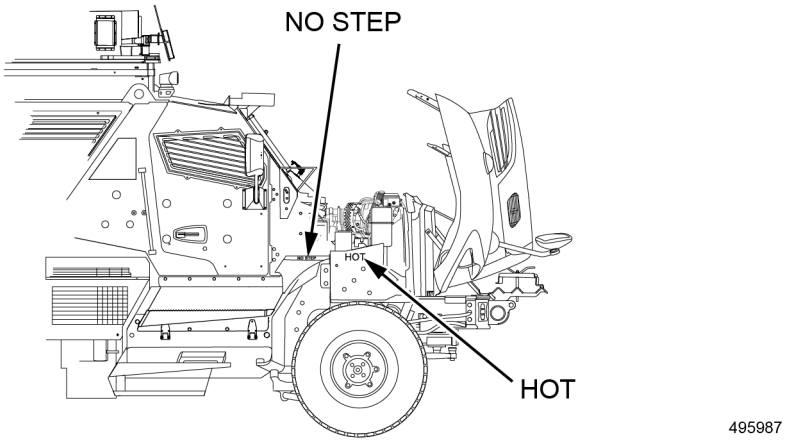


Figure 16. Commander Side Hood Opened Markings.

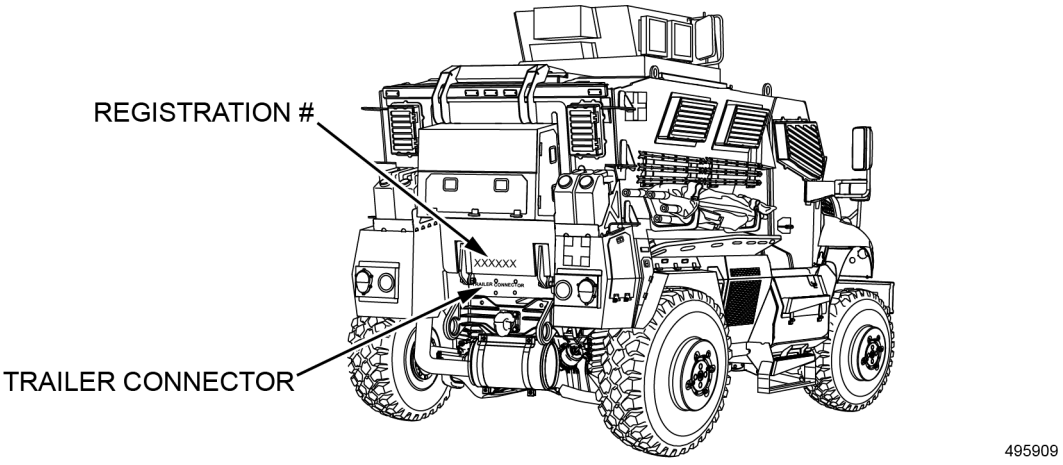


Figure 17. Rear Door/Ramp Markings.

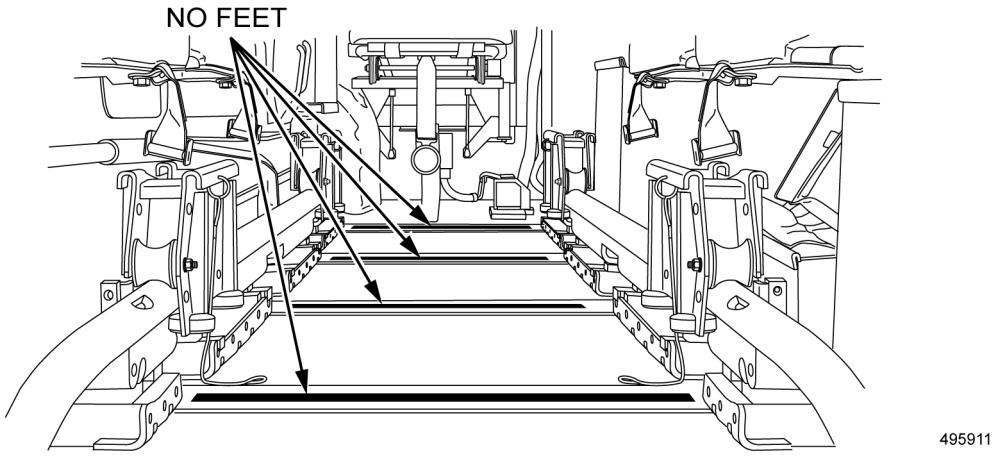


Figure 18. Passenger Compartment Markings.

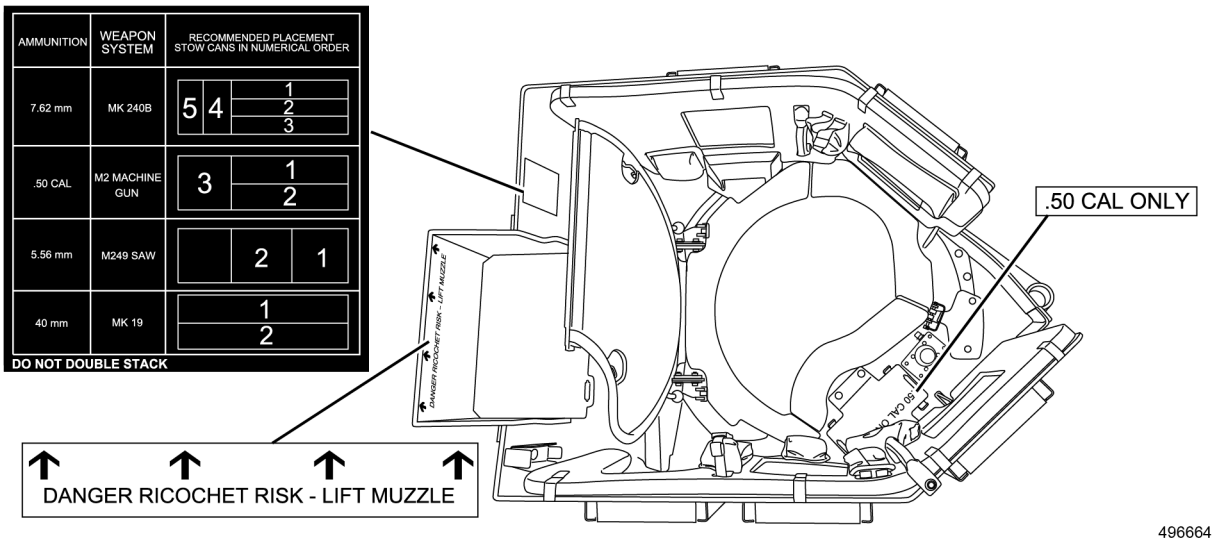


Figure 19. OGPK Markings and Decals.

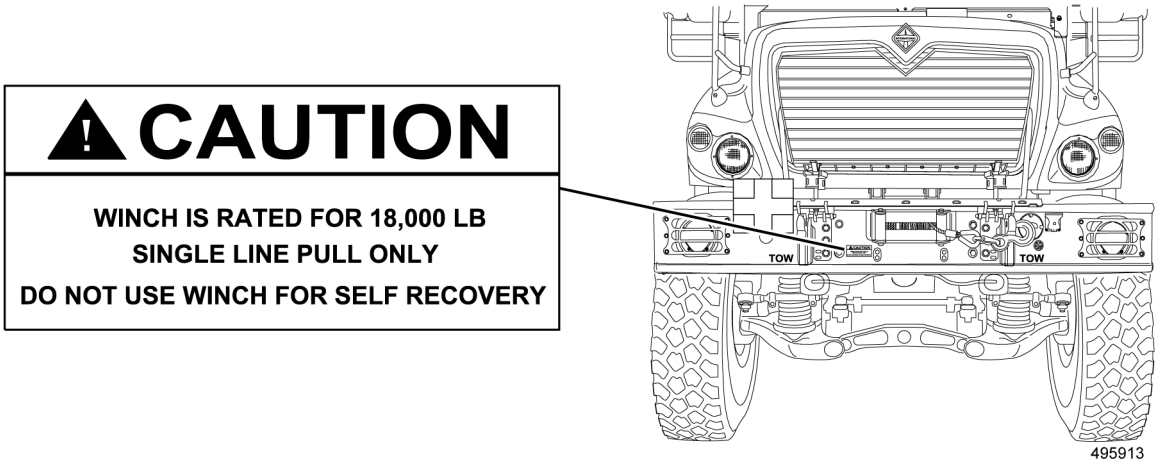


Figure 20. Front Bumper Winch Decal.

NOTE

Commander side shown; driver side similar.

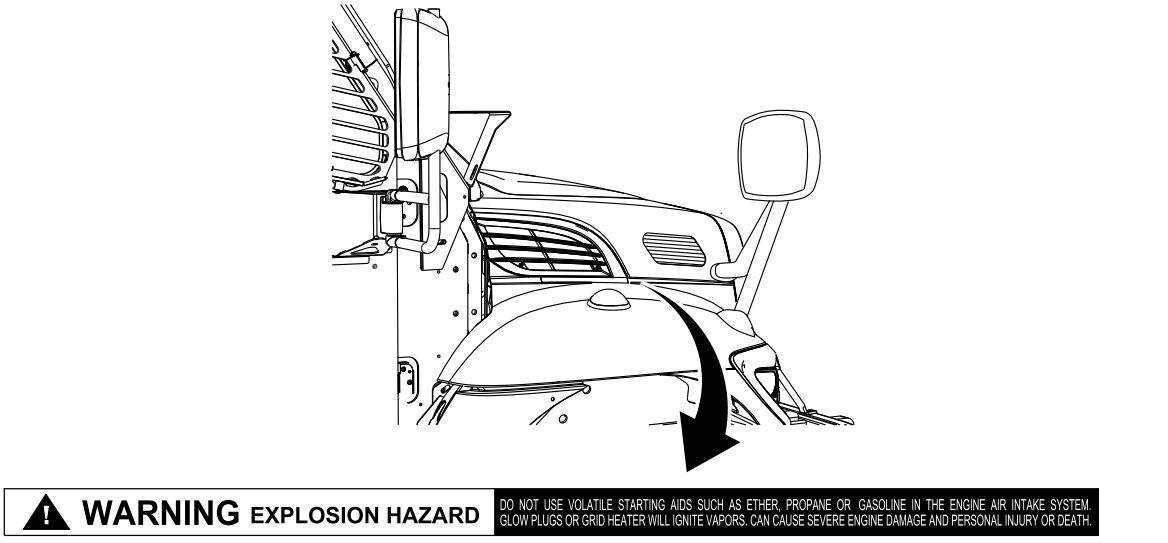

WARNING EXPLOSION HAZARD
DO NOT USE VOLATILE STARTING AIDS SUCH AS ETHER, PROPANE OR GASOLINE IN THE ENGINE AIR INTAKE SYSTEM. GLOW PLUGS OR GRID HEATER WILL IGNITE VAPORS, CAN CAUSE SEVERE ENGINE DAMAGE AND PERSONAL INJURY OR DEATH.
212919

Figure 21. Commander Side Hood Decal.

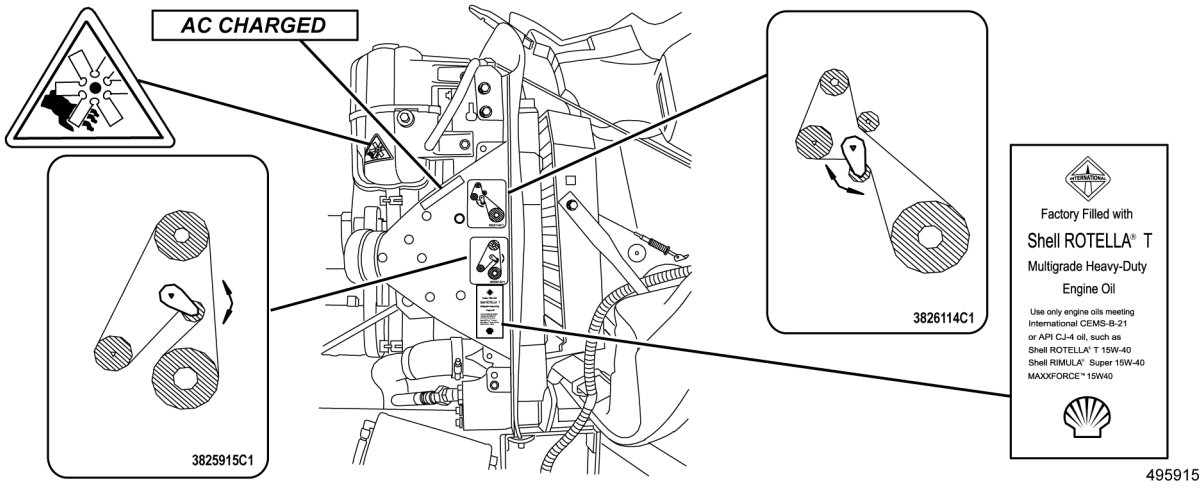


Figure 22. Commander Side Fan Belt and Antifreeze Decal.

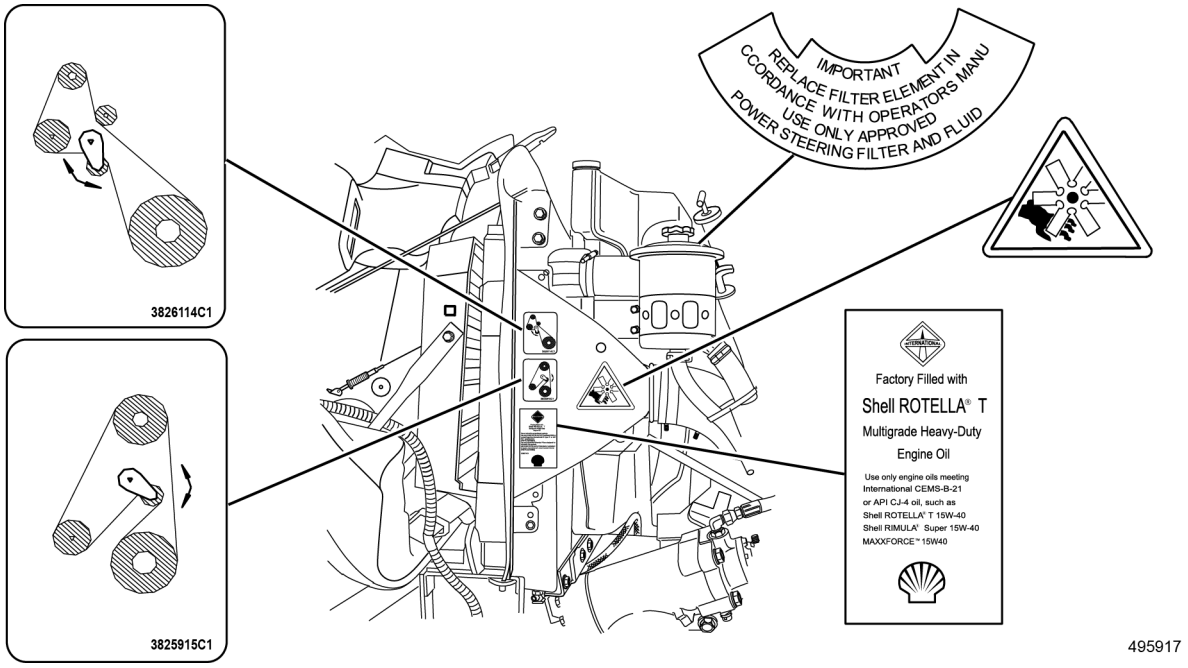


Figure 23. Driver Side Fan Belt and Engine Oil Decal.

NOTE

Power Distribution Center (PDC) armor removed from figure for clarity.

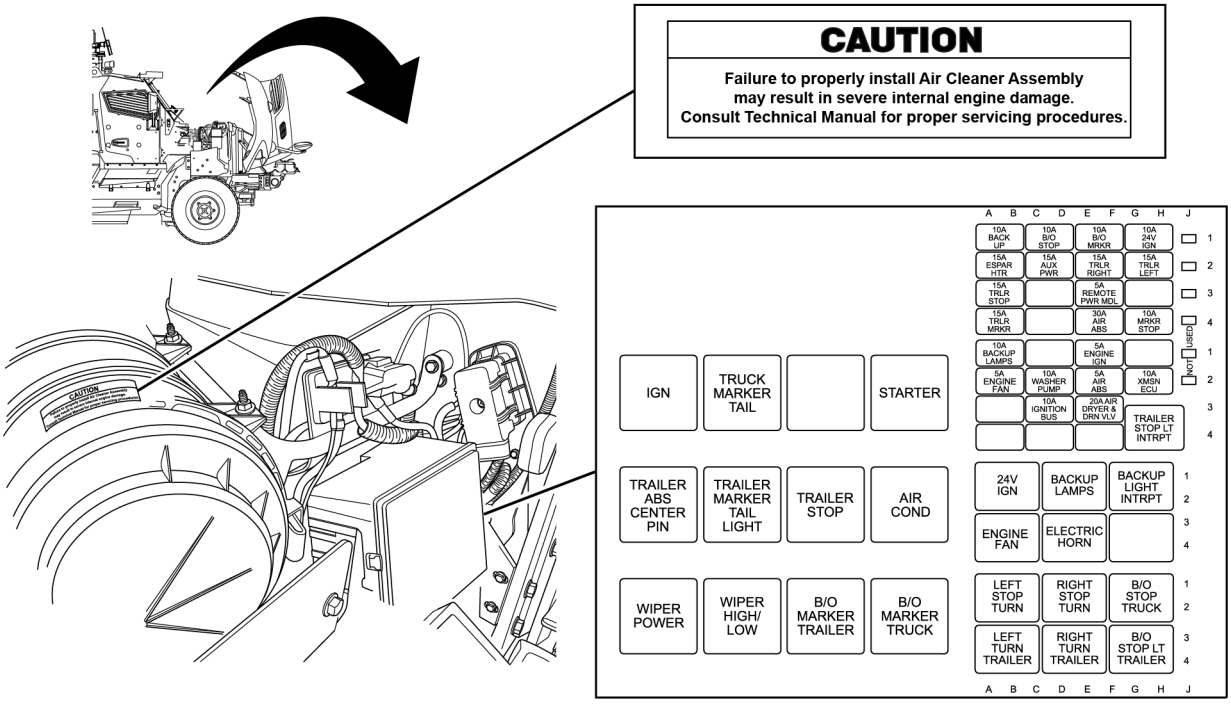


Figure 24. Underhood Fuse/Relay Center Decal.

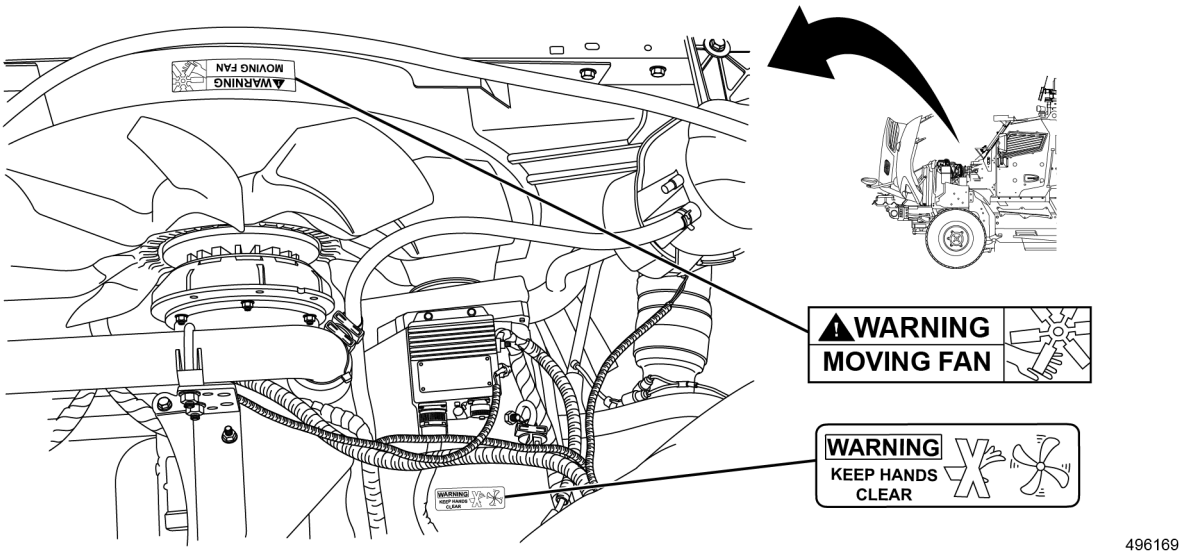


Figure 25. Underhood Fan Decals.

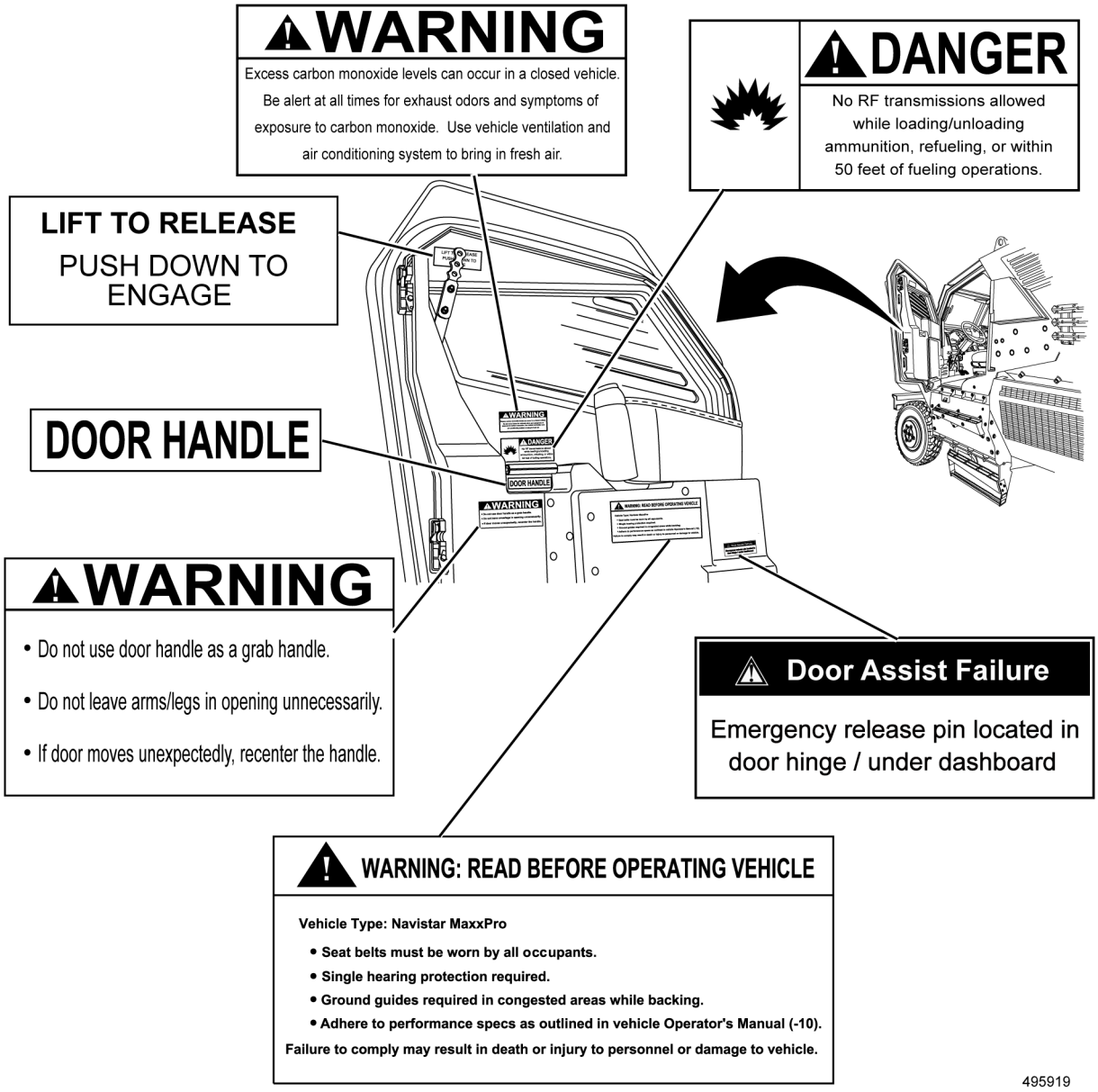

WARNING
Excess carbon monoxide levels can occur in a closed vehicle. Be alert at all times for exhaust odors and symptoms of exposure to carbon monoxide. Use vehicle ventilation and air conditioning system to bring in fresh air.
DANGER
No RF transmissions allowed while loading/unloading ammunition, refueling, or within 50 feet of fueling operations.
LIFT TO RELEASE
PUSH DOWN TO ENGAGE
DOOR HANDLE
WARNING
• Do not use door handle as a grab handle.
• Do not leave arms/legs in opening unnecessarily.
• If door moves unexpectedly, recenter the handle.
Door Assist Failure
Emergency release pin located in door hinge / under dashboard
WARNING: READ BEFORE OPERATING VEHICLE
Vehicle Type: Navistar MaxxPro
• Seat belts must be worn by all occupants.
• Single hearing protection required.
• Ground guides required in congested areas while backing.
• Adhere to performance specs as outlined in vehicle Operator's Manual (-10).
Failure to comply may result in death or injury to personnel or damage to vehicle.
495919

Figure 26. Driver Side Door Decals.

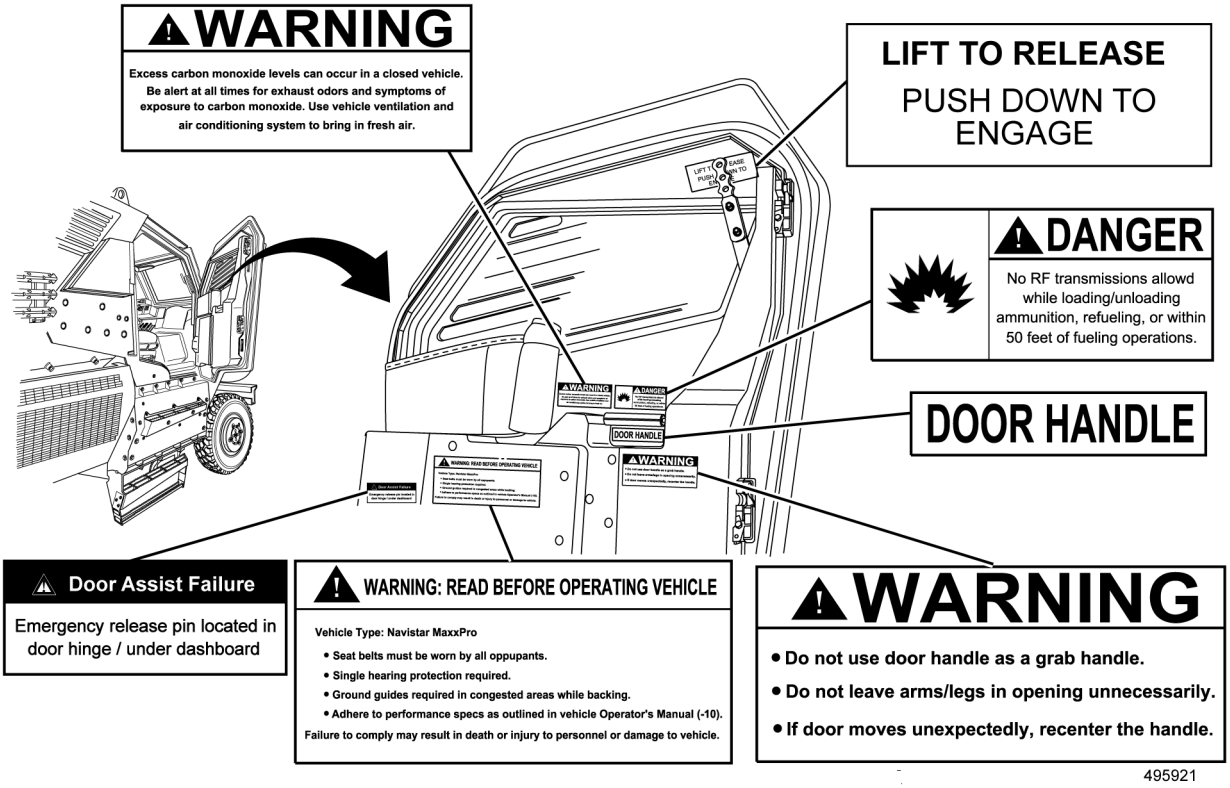

WARNING
Excess carbon monoxide levels can occur in a closed vehicle. Be alert at all times for exhaust odors and symptoms of exposure to carbon monoxide. Use vehicle ventilation and air conditioning system to bring in fresh air.
LIFT TO RELEASE
PUSH DOWN TO ENGAGE
DANGER
No RF transmissions allowd while loading/unloading ammunition, refueling, or within 50 feet of fueling operations.
DOOR HANDLE
Door Assist Failure
Emergency release pin located in door hinge / under dashboard
WARNING: READ BEFORE OPERATING VEHICLE
Vehicle Type: Navistar MaxxPro
• Seat belts must be worn by all oppupants.
• Single hearing protection required.
• Ground guides required in congested areas while backing.
• Adhere to performance specs as outlined in vehicle Operator's Manual (-10).
Failure to comply may result in death or injury to personnel or damage to vehicle.
WARNING
• Do not use door handle as a grab handle.
• Do not leave arms/legs in opening unnecessarily.
• If door moves unexpectedly, recenter the handle.
495921

Figure 27. Commander Side Door Decals.

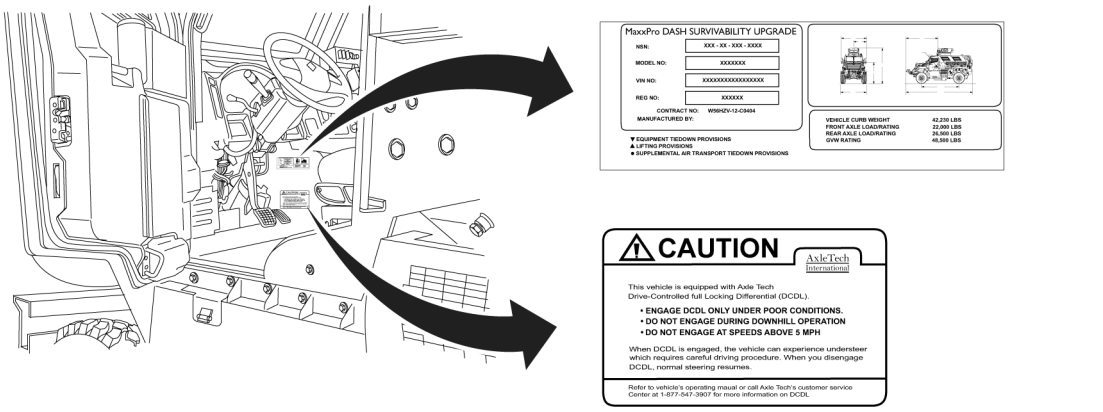

MaxxPro DASH SURVIVABILITY UPGRADE
NSN: XXX - XX - XXX - XXXX
MODEL NO: XXXXXXX
VIN NO: XXXXXXXXXXXXXXXXX
REG NO: XXXXXX
CONTRACT NO: W56HZV-12-C0494
MANUFACTURED BY:
▼ EQUIPMENT TIEDOWN PROVISIONS
▲ LIFTING PROVISIONS
● SUPPLEMENTAL AIR TRANSPORT TIEDOWN PROVISIONS
VEHICLE CURB WEIGHT 42,230 LBS
FRONT AXLE LOAD/RATING 22,000 LBS
REAR AXLE LOAD/RATING 26,500 LBS
GVW RATING 48,500 LBS
CAUTION
AxleTech International
This vehicle is equipped with Axle Tech Drive-Controlled full Locking Differential (DCDL).
• ENGAGE DCDL ONLY UNDER POOR CONDITIONS.
• DO NOT ENGAGE DURING DOWNHILL OPERATION
• DO NOT ENGAGE AT SPEEDS ABOVE 5 MPH
When DCDL is engaged, the vehicle can experience understeer which requires careful driving procedure. When you disengage DCDL, normal steering resumes.
Refer to vehicle's operating maual or call Axle Tech's customer service Center at 1-877-647-3907 for more information on DCDL
523361

Figure 28. Vehicle Identification Number Plate and Driver-Controlled Full Locking Differential (DCDL) Interior Decal.

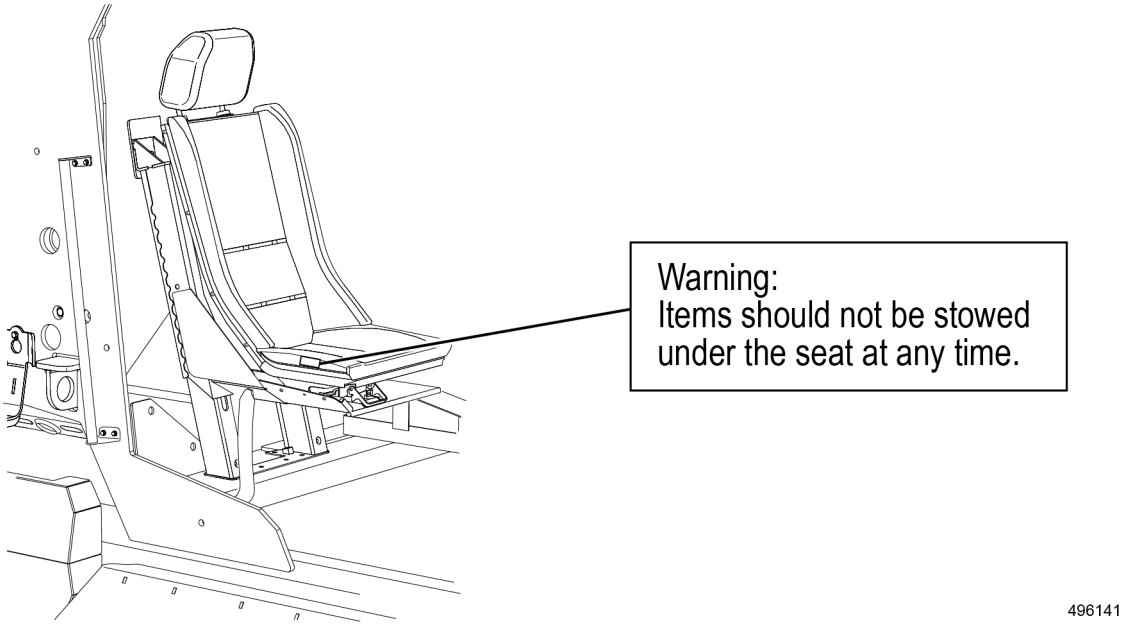


Figure 29. Driver and Commander Seat Blast Decal.

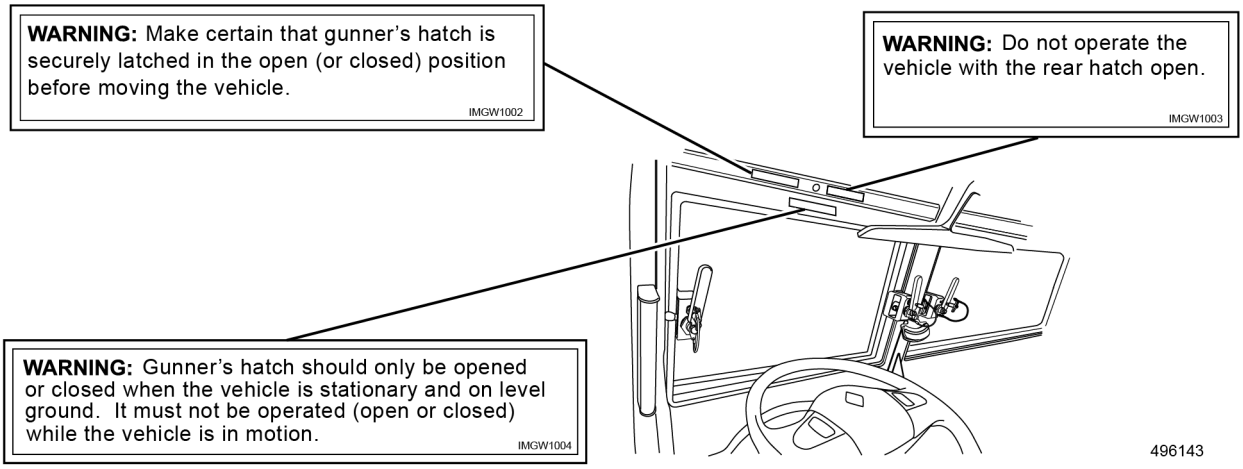

WARNING: Make certain that gunner's hatch is securely latched in the open (or closed) position before moving the vehicle.
IMGW1002
WARNING: Do not operate the vehicle with the rear hatch open.
IMGW1003
WARNING: Gunner's hatch should only be opened or closed when the vehicle is stationary and on level ground. It must not be operated (open or closed) while the vehicle is in motion.
IMGW1004
496143

Figure 30. Driver Side Forward Interior Decal.

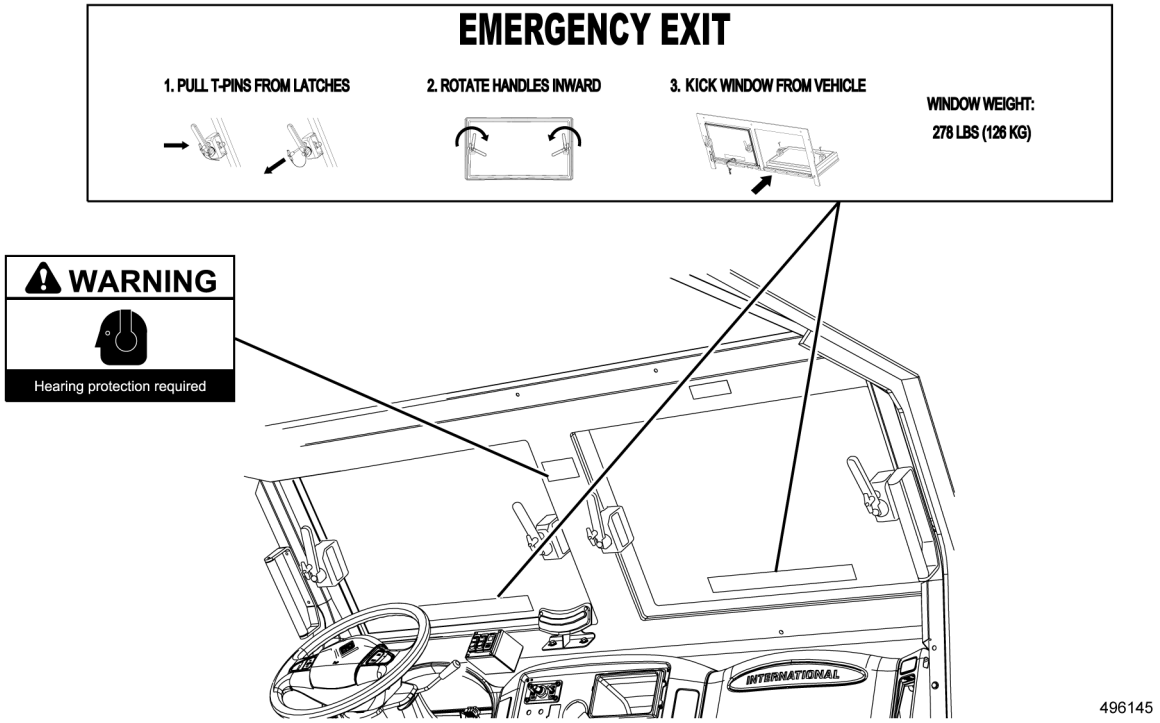


Figure 31. Vehicle Emergency Egress (VEE) Window Decals.

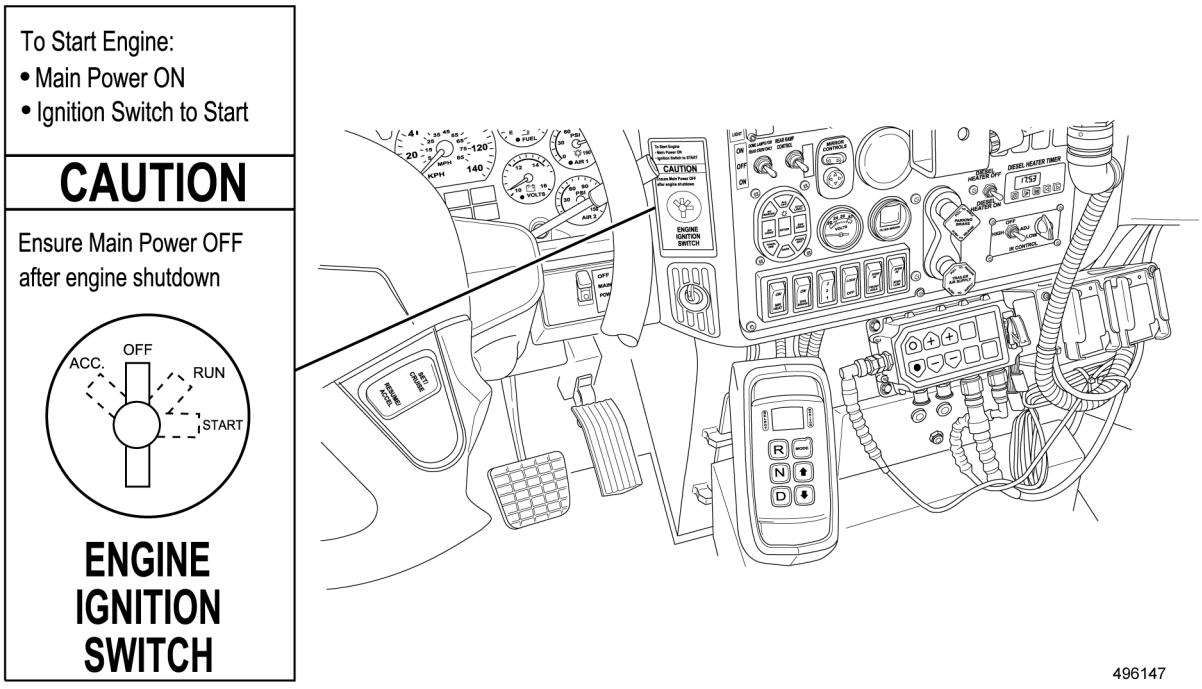


Figure 32. Instrument Panel (IP) Decal.

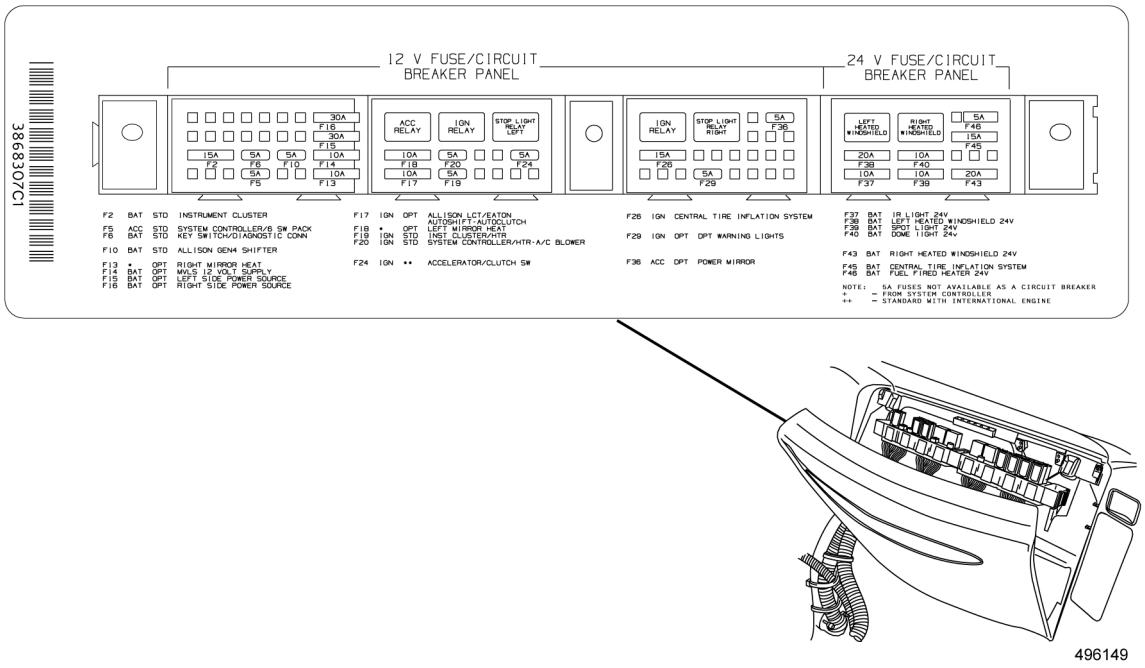


Figure 33. IP Fuse/Relay Decal.

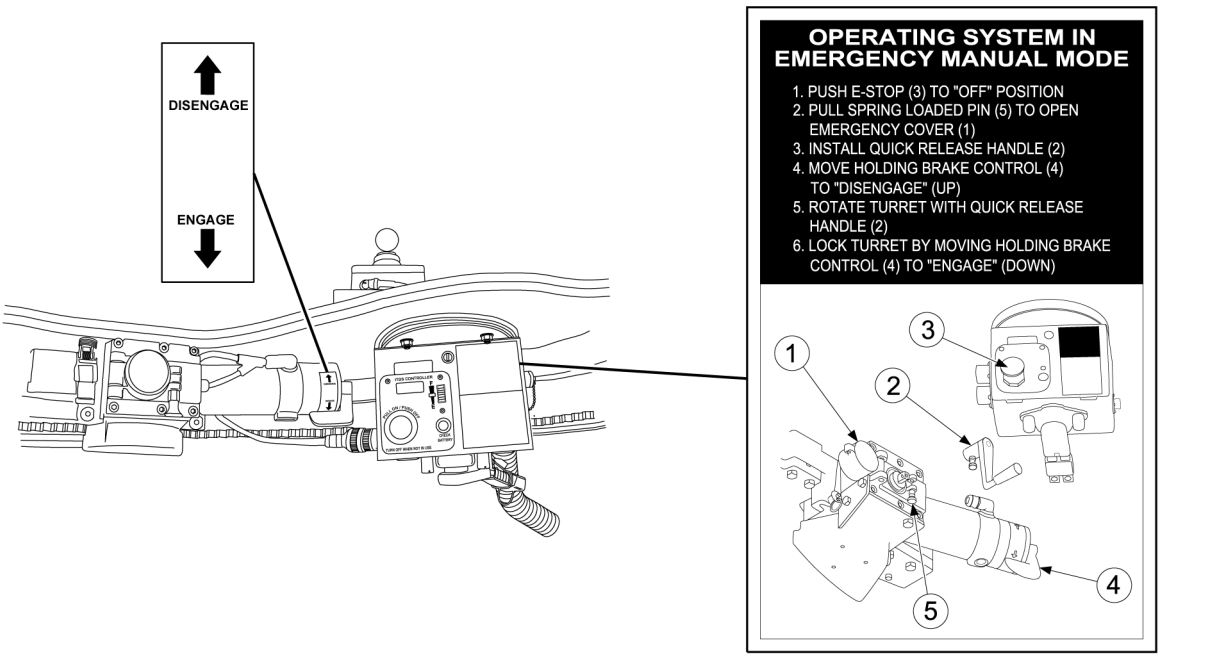

DISENGAGE
ENGAGE
OPERATING SYSTEM IN EMERGENCY MANUAL MODE
1. PUSH E-STOP (3) TO "OFF" POSITION
2. PULL SPRING LOADED PIN (5) TO OPEN EMERGENCY COVER (1)
3. INSTALL QUICK RELEASE HANDLE (2)
4. MOVE HOLDING BRAKE CONTROL (4) TO "DISENGAGE" (UP)
5. ROTATE TURRET WITH QUICK RELEASE HANDLE (2)
6. LOCK TURRET BY MOVING HOLDING BRAKE CONTROL (4) TO "ENGAGE" (DOWN)
1
2
3
4
5
496151

Figure 34. Improved Turret Drive System (ITDS) Controller Decal.

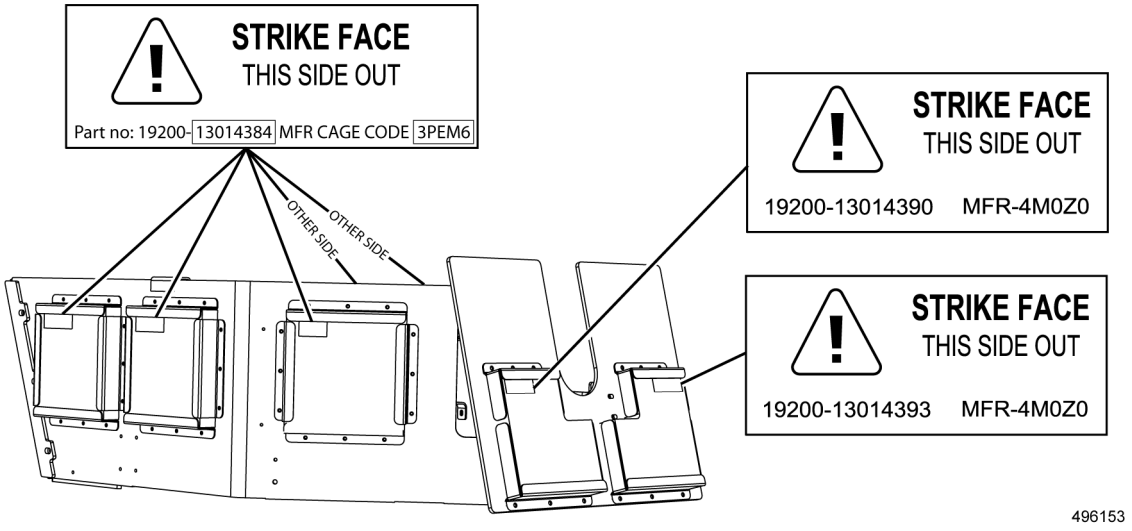


Figure 35. OGPK Transparent Armor Decal.

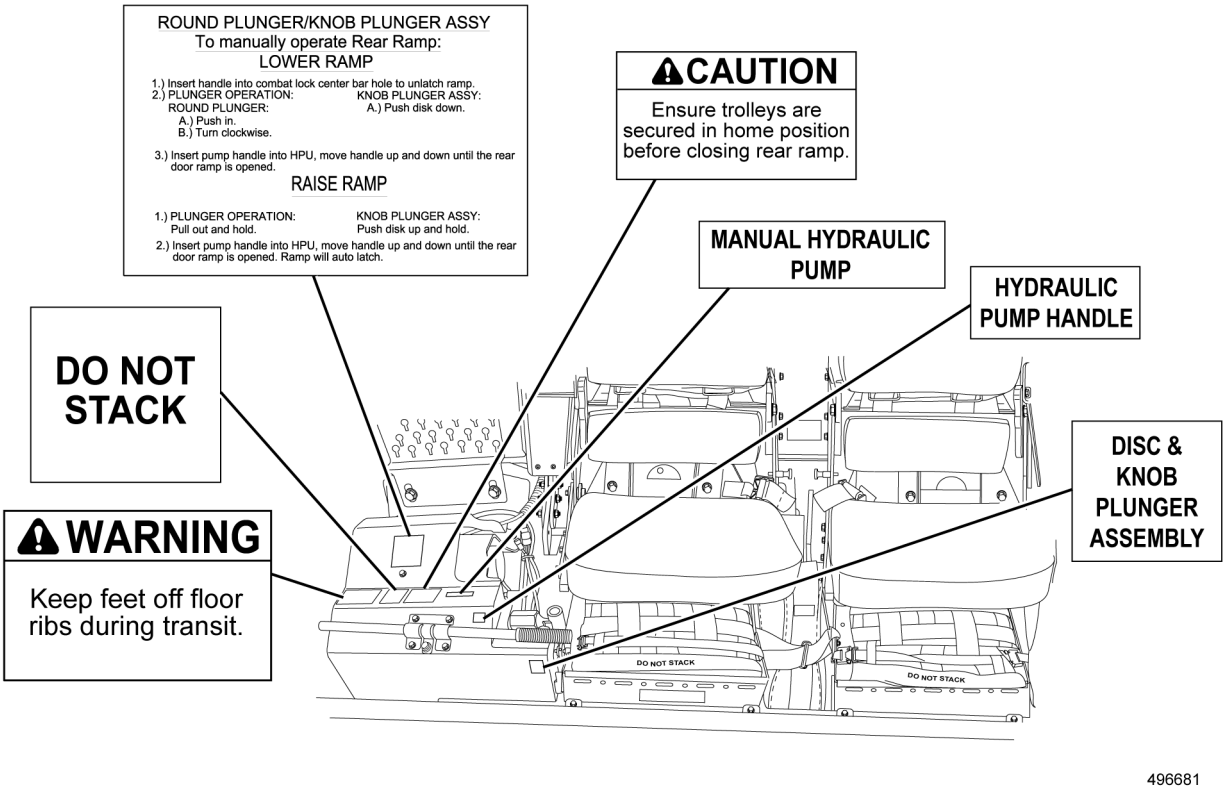

ROUND PLUNGER/KNOB PLUNGER ASSY
To manually operate Rear Ramp:
LOWER RAMP
1.) Insert handle into combat lock center bar hole to unlatch ramp.
2.) PLUNGER OPERATION:
ROUND PLUNGER:
A.) Push in.
B.) Turn clockwise.
KNOB PLUNGER ASSY:
A.) Push disk down.
3.) Insert pump handle into HPU, move handle up and down until the rear door ramp is opened.
RAISE RAMP
1.) PLUNGER OPERATION:
Pull out and hold.
KNOB PLUNGER ASSY:
Push disk up and hold.
2.) Insert pump handle into HPU, move handle up and down until the rear door ramp is opened. Ramp will auto latch.
CAUTION
Ensure trolleys are secured in home position before closing rear ramp.
MANUAL HYDRAULIC PUMP
HYDRAULIC PUMP HANDLE
DO NOT STACK
DISC & KNOB PLUNGER ASSEMBLY
WARNING
Keep feet off floor ribs during transit.
DO NOT STACK
DO NOT STACK
496681

Figure 36. Driver Side Floor Decals.

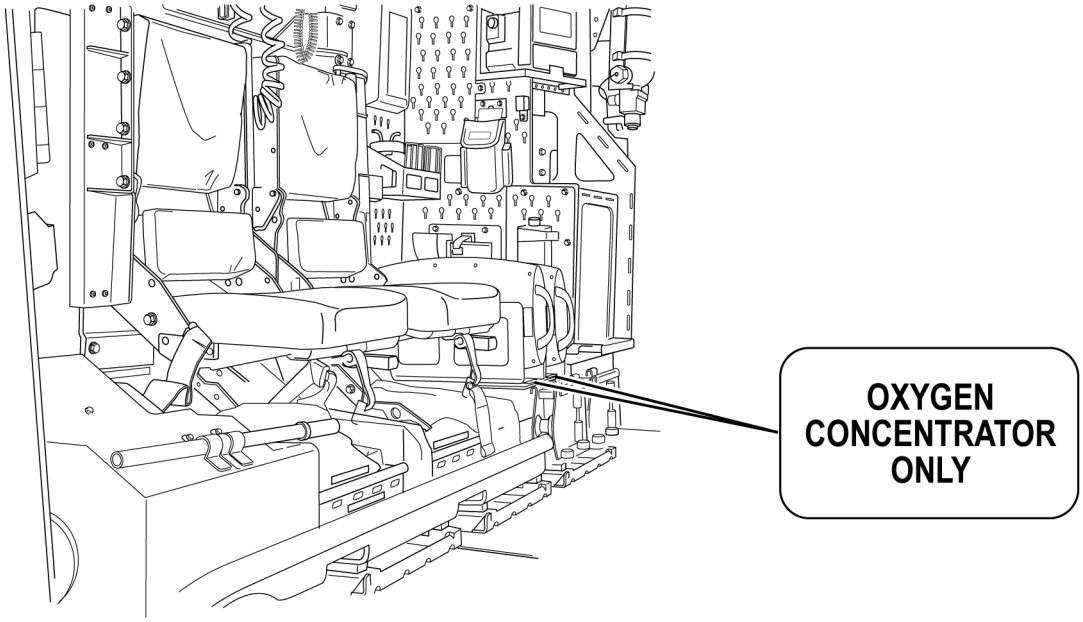


Figure 37. Driver Side Wall Mounted Decal.

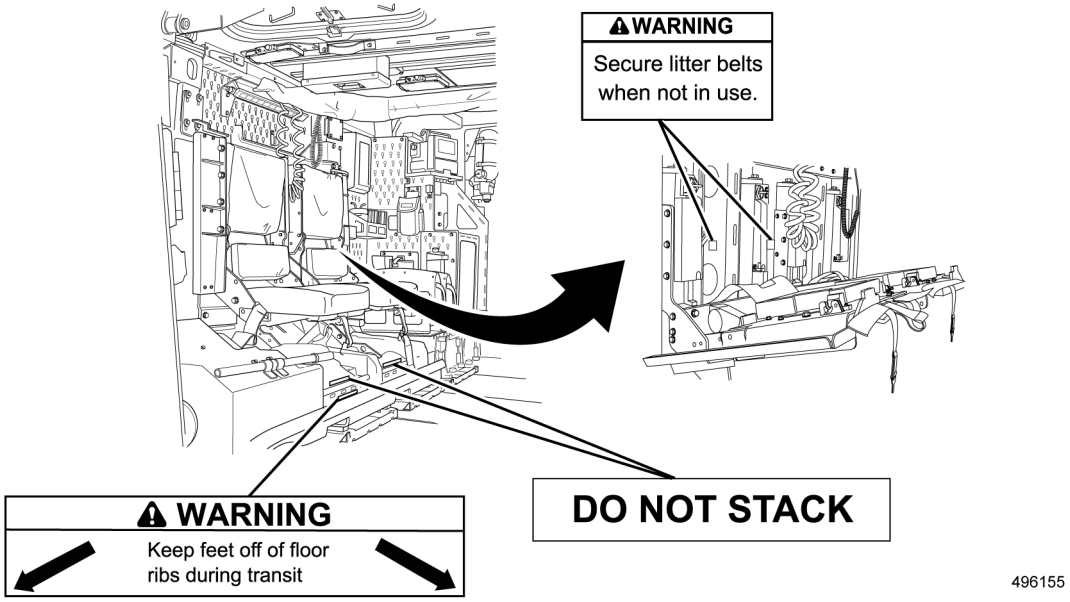


Figure 38. Driver Side Passenger Compartment Decal.

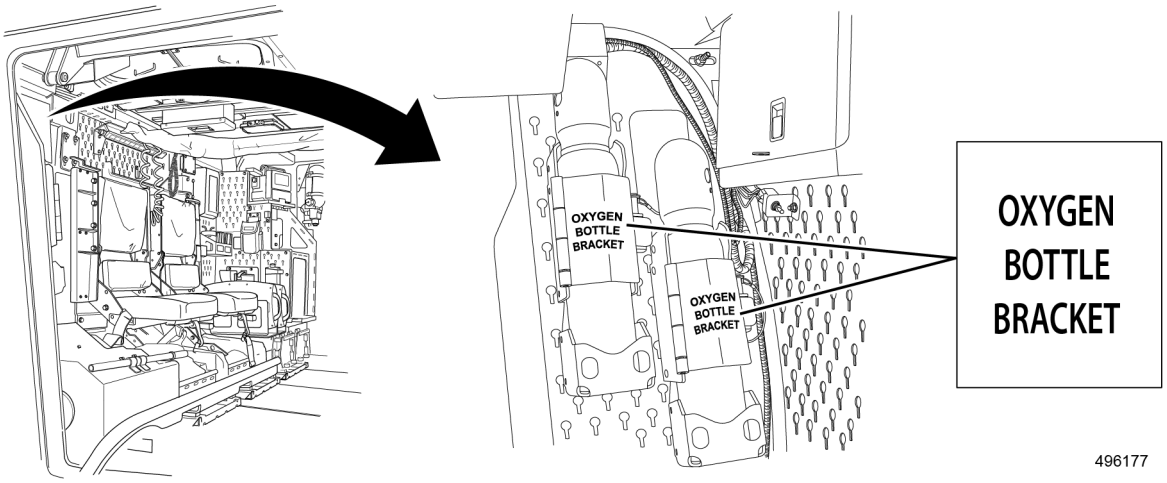


Figure 39. Oxygen Bottle Bracket Decal.

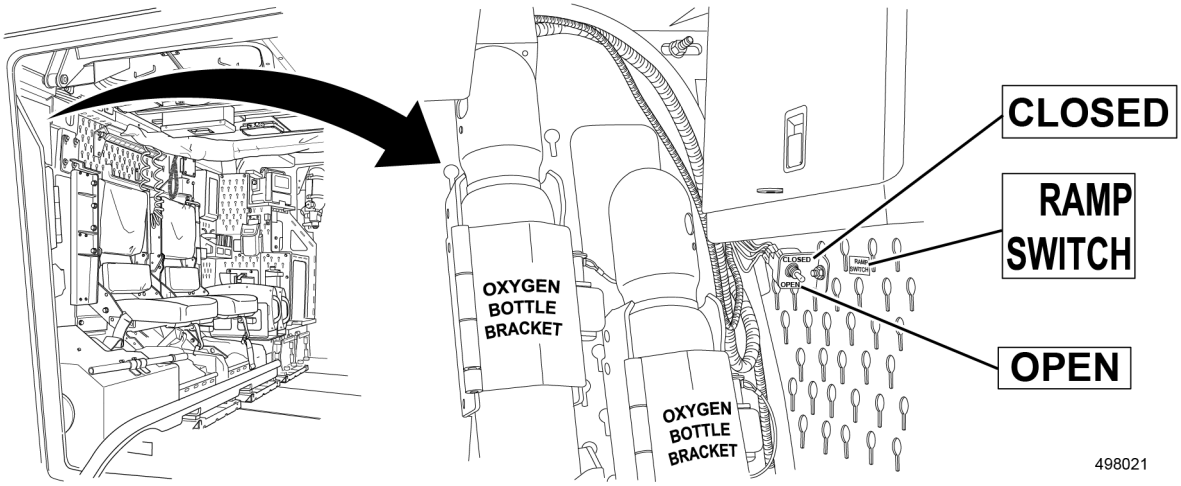


Figure 40. Ramp Switch Decal.

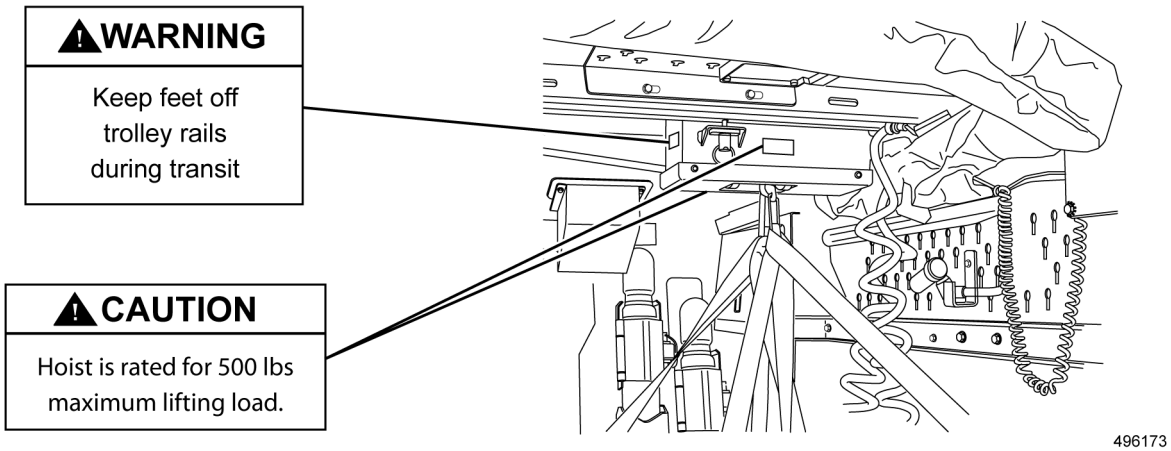


Figure 41. Driver Side Litter Trolley Decal.

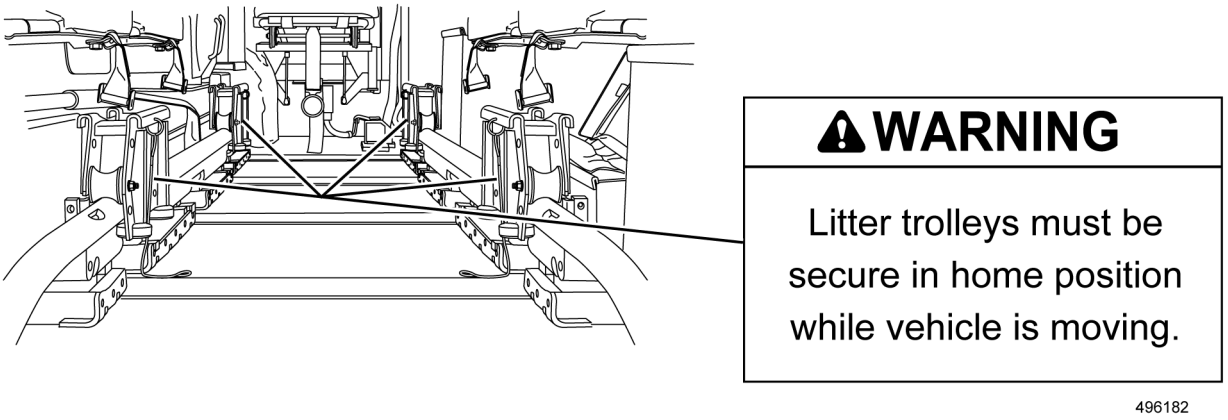


Figure 42. Side Passenger Floor Litter Trolley Decals.

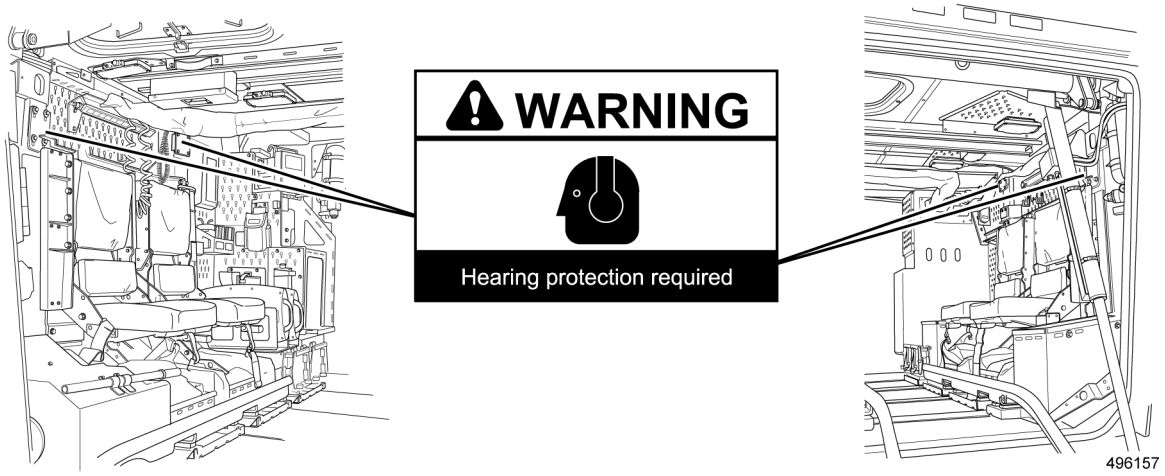


Figure 43. Side Passenger Compartment Decals.

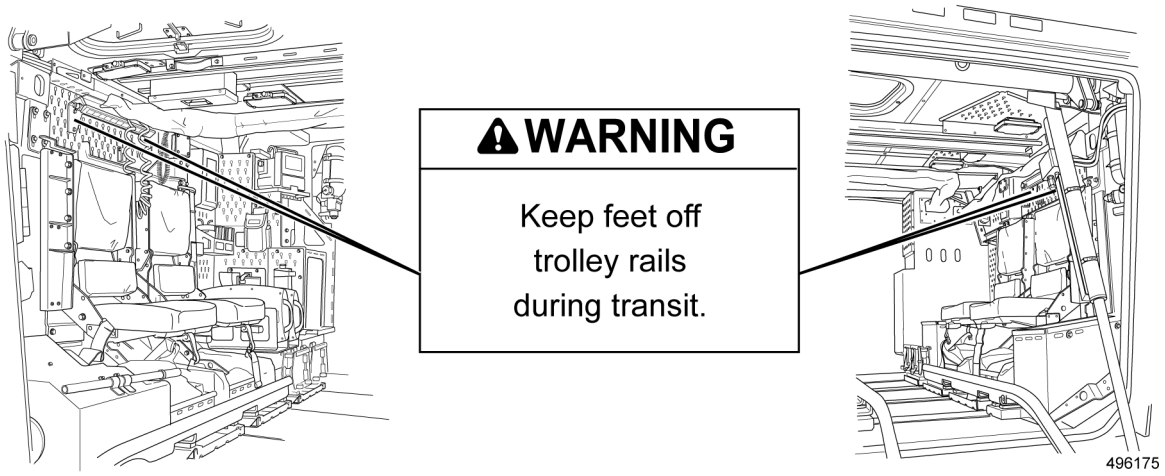


Figure 44. Side Passenger Trolley Rails Decal.

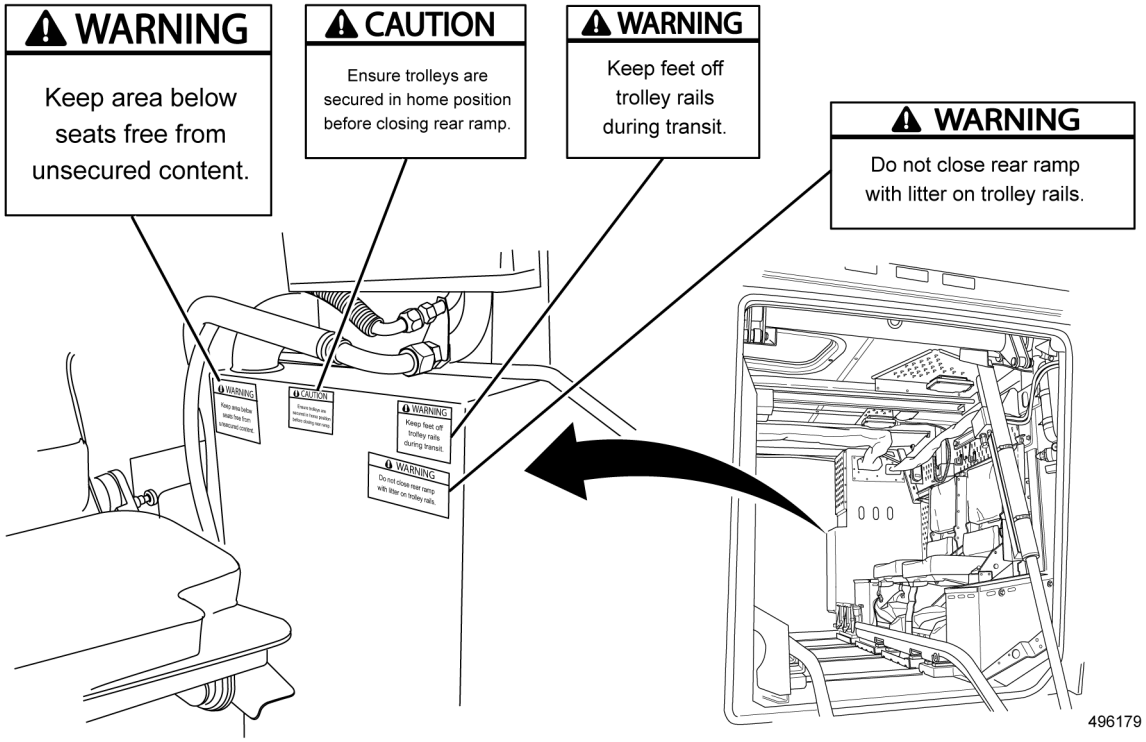

WARNING
Keep area below seats free from unsecured content.
CAUTION
Ensure trolleys are secured in home position before closing rear ramp.
WARNING
Keep feet off trolley rails during transit.
WARNING
Do not close rear ramp with litter on trolley rails.
496179

Figure 45. Seat/Rear Ramp Decal.

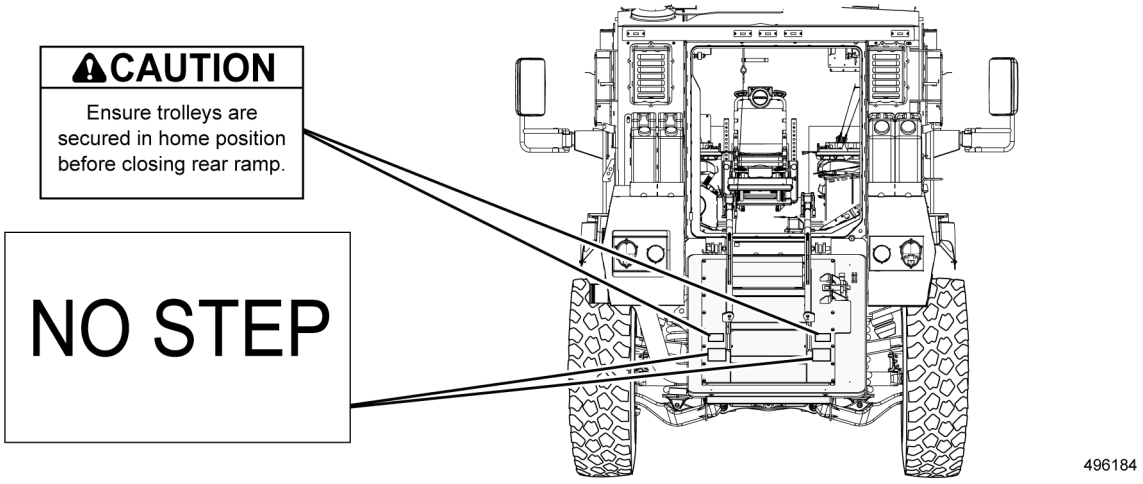


Figure 46. Rear Ramp Trolley Decal.

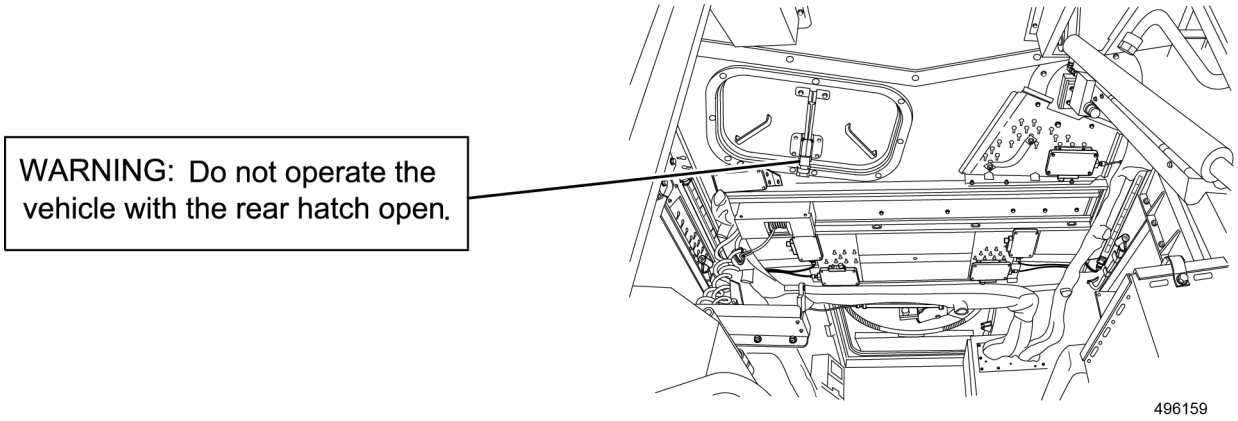


Figure 47. Emergency Hatch Decal.

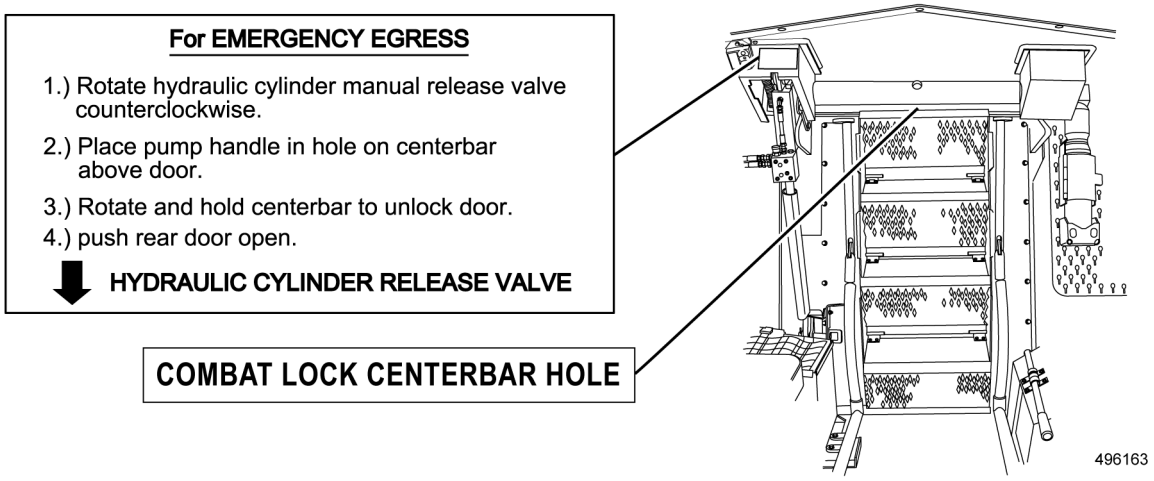

For EMERGENCY EGRESS
1.) Rotate hydraulic cylinder manual release valve counterclockwise.
2.) Place pump handle in hole on centerbar above door.
3.) Rotate and hold centerbar to unlock door.
4.) push rear door open.
HYDRAULIC CYLINDER RELEASE VALVE
COMBAT LOCK CENTERBAR HOLE
496163

Figure 48. Rear Door/Ramp Decals.

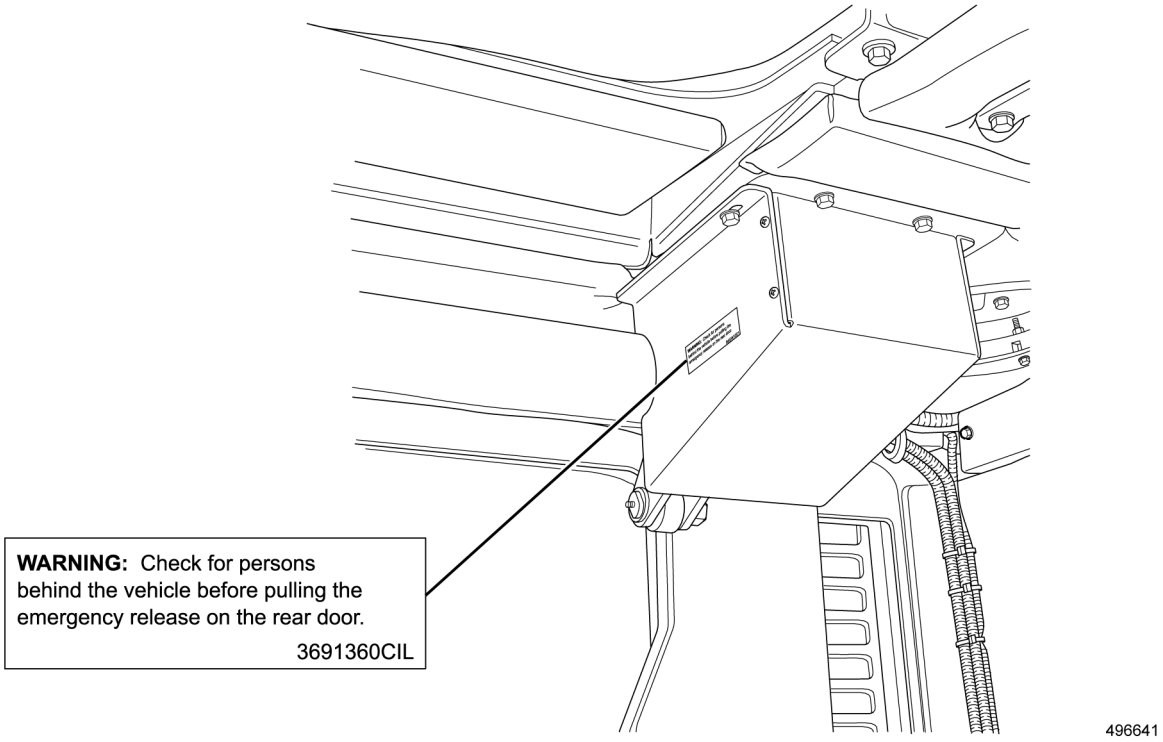


Figure 49. Driver Side Rear Door/Ramp Decal.

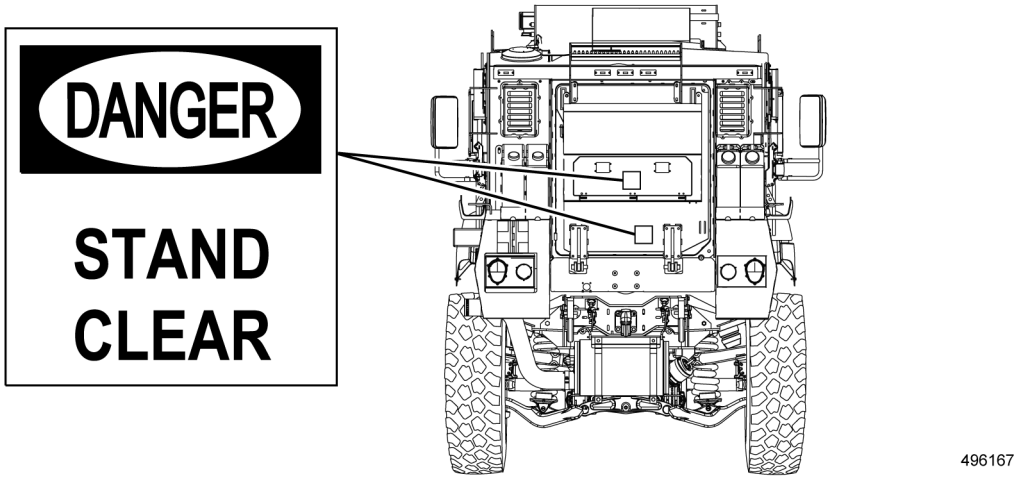


Figure 50. Rear Door/Ramp and Stowage Box Decals.

END OF WORK PACKAGE

CREW MAINTENANCE

ON-VEHICLE EQUIPMENT LOAD PLAN

SCOPE

This work package lists user equipment and its location on the M1266A1.

NOTE

Items with an asterisk (*) are part of Medical Equipment Set (MES) kit.

All medical equipment should be properly stored. Refer to WP 0041, Operation Under Usual Conditions - Securing Medical Equipment.

EXTERIOR STOWAGE LOCATIONS

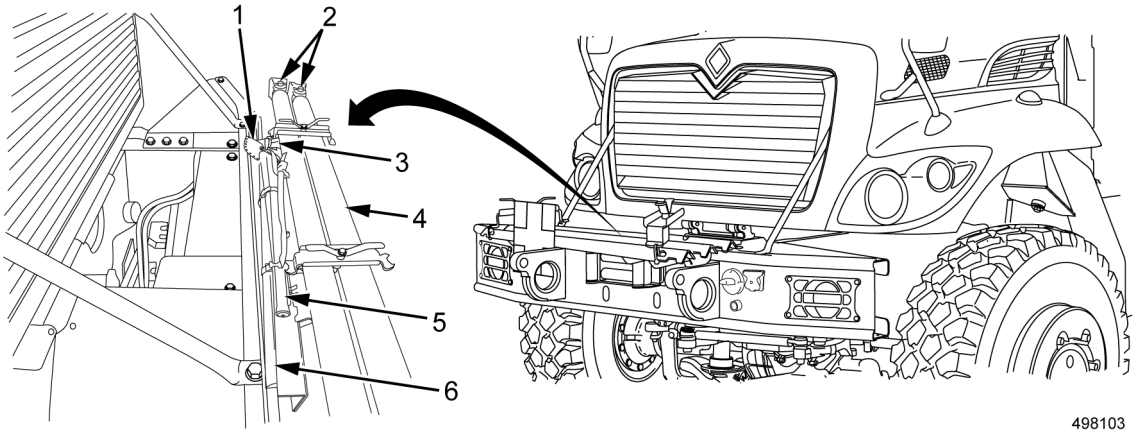


Figure 1. External Front Vehicle Stowage.

Table 1. External Front Vehicle Stowage.

ITEM NO.	ITEM NAME	QTY	NSN
1	Ax Head Sheath	1	5110-01-416-7830
2	Ring Drawbar Coupler (Attached to Tow Bar)	2	2540-00-863-3153
3	Hand Hammer (Sledge)	1	5120-00-243-2957
4	Motor Vehicle Tow bar	1	2540-01-267-2912
5	Single Bit Ax	1	5110-01-416-7827
6	Crowbar	1	5120-00-224-1390

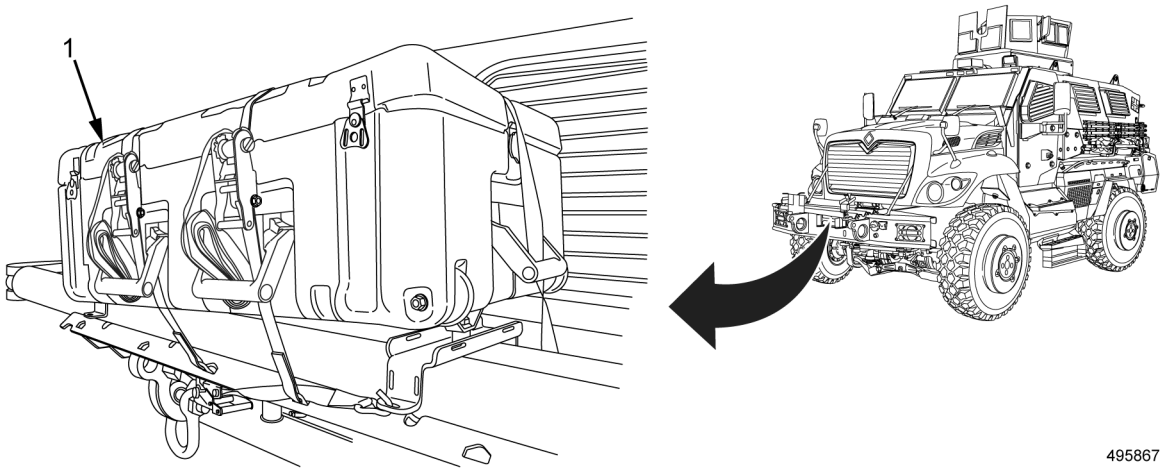


Figure 2. Front Bumper Mount.

Table 2. Front Bumper Mount.

ITEM NO.	ITEM NAME	QTY	NSN
1	Case, Medical Insert (#3)*	1	6545-01-533-8202

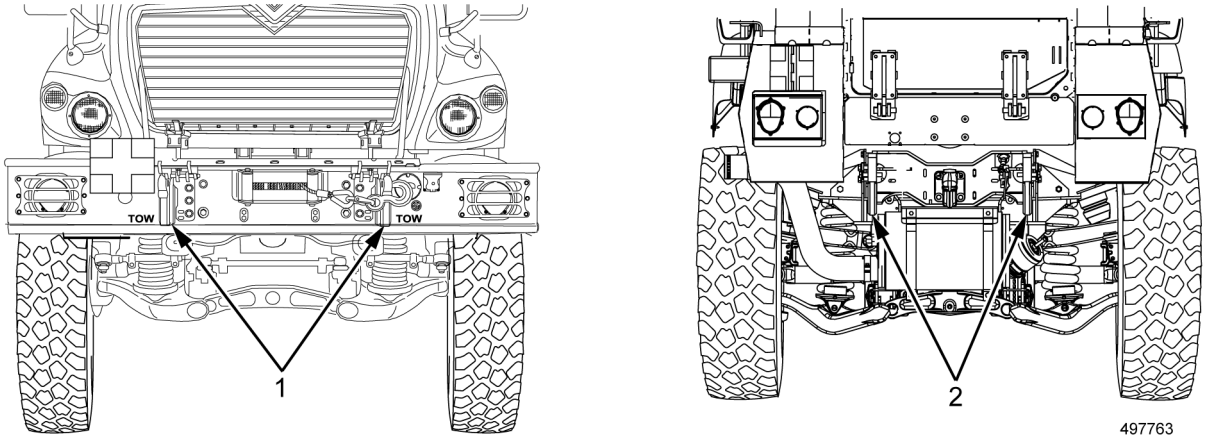


Figure 3. Front and Rear Tow Hooks.

Table 3. Front and Rear Tow Hooks.

ITEM NO.	ITEM NAME	QTY	NSN
1	Safety Anchor Shackle (Front)	2	4030-01-187-0964
2	Safety Anchor Shackle (Rear)	2	4030-01-187-0964

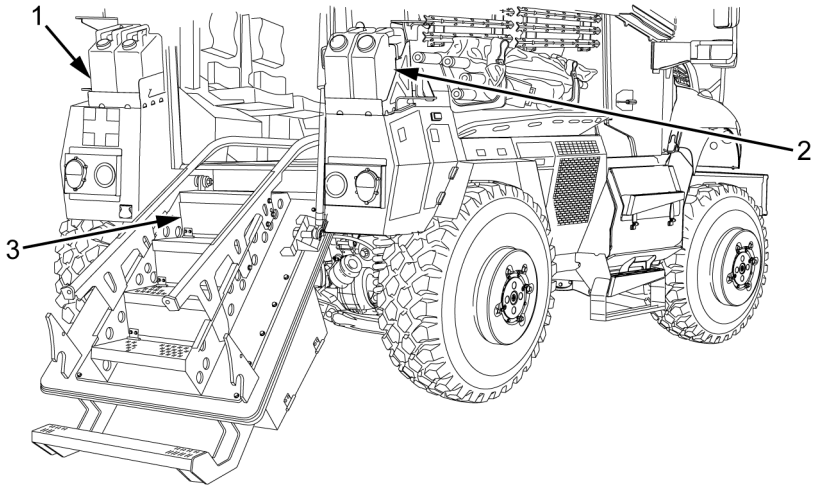


Figure 4. Marker Panel and Military Cans Stowage.

Table 4. Marker Panel and Military Cans Stowage.

ITEM NO.	ITEM NAME	QTY	NSN
1	Can, Military (Water)	2	7240-00-089-3827
2	Can, Military (Fuel)	2	7240-01-337-5268
3	Marker Panel	1	8345-00-174-6865

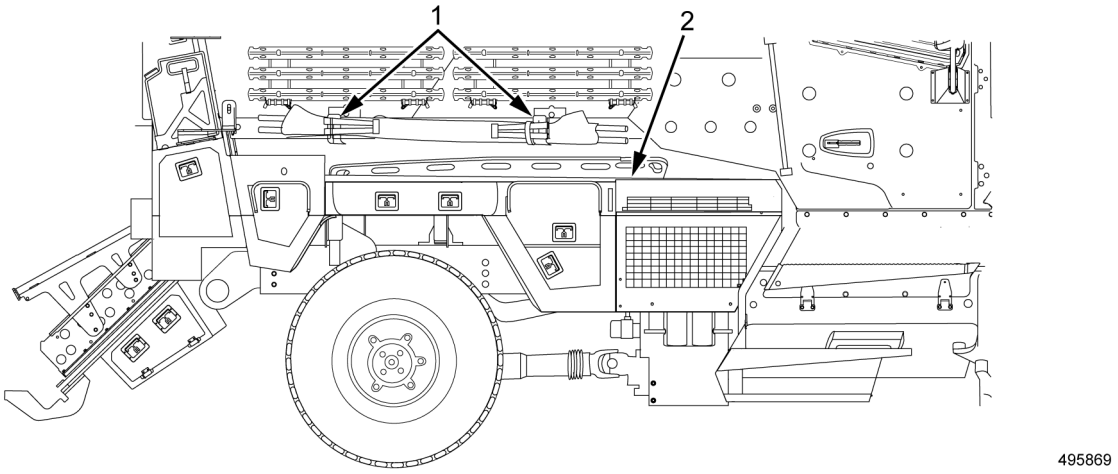


Figure 5. Commander Side Folding Rigid Litters and Spineboard Without RPG Nets.

Table 5. Commander Side Folding Rigid Litters and Spineboard Without RPG Nets.

ITEM NO.	ITEM NAME	QTY	NSN
1	Litter, Folding, Rigid*	2	6530-01-380-7309
2	Spineboard*	1	6530-01-490-2487

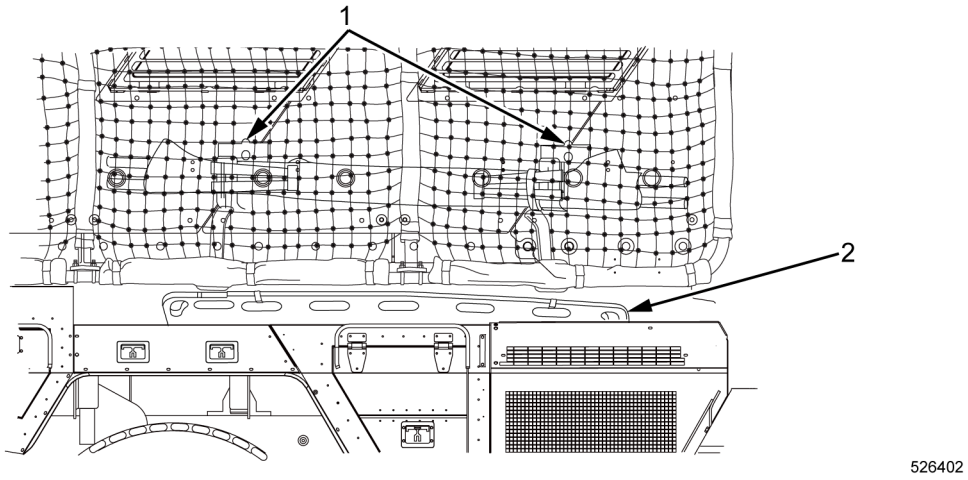


Figure 6. Commander Side Folding Rigid Litters and Spineboard With RPG Nets.

Table 6. Commander Side Folding Rigid Litters and Spineboard With RPG Nets.

ITEM NO.	ITEM NAME	QTY	NSN
1	Litter, Folding, Rigid*	2	6530-01-380-7309
2	Spineboard*	1	6530-01-490-2487

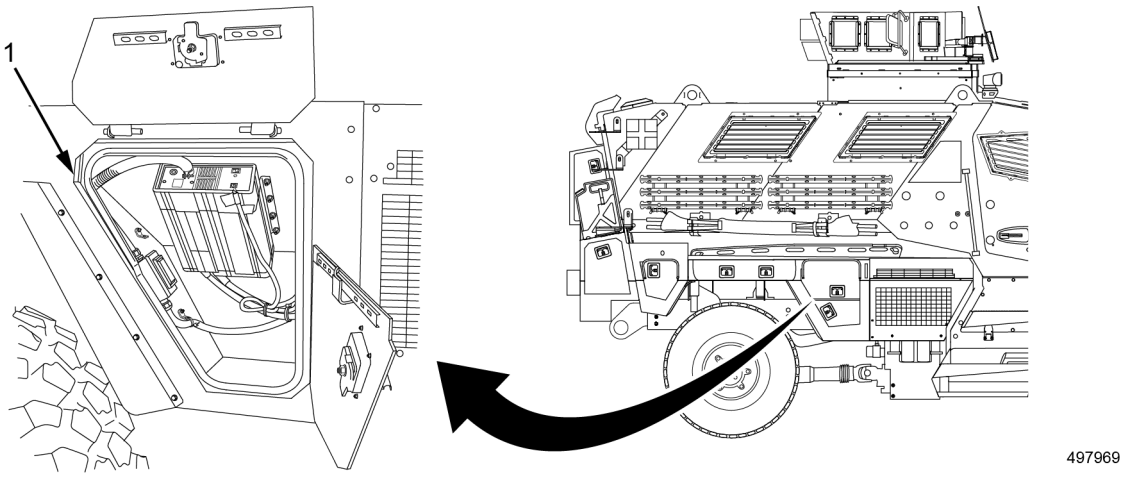


Figure 7. Commander Side Forward Stowage Box.

Table 7. Commander Side Forward Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	**CAUTION** Do not store any components in commander side forward stowage box. Failure to comply may result in damage to equipment.	N/A	N/A

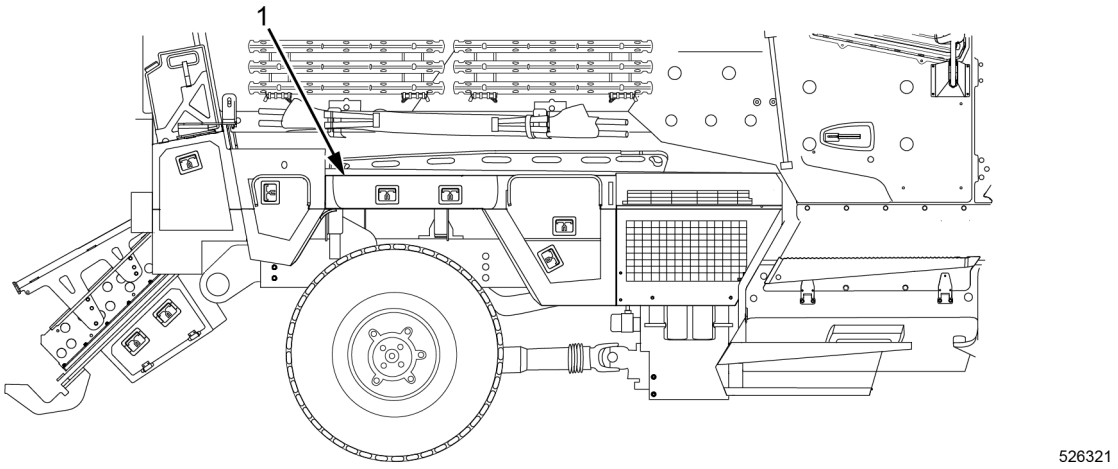


Figure 8. Commander Side Center Forward Stowage Box.

Table 8. Commander Side Center Forward Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	Strap, Immobilization *	1	6530-01-693-0010
1	Strap Webbing, Patient Securing *	6	6530-00-784-4205
1	Pinch Bar	1	5120-00-224-1372

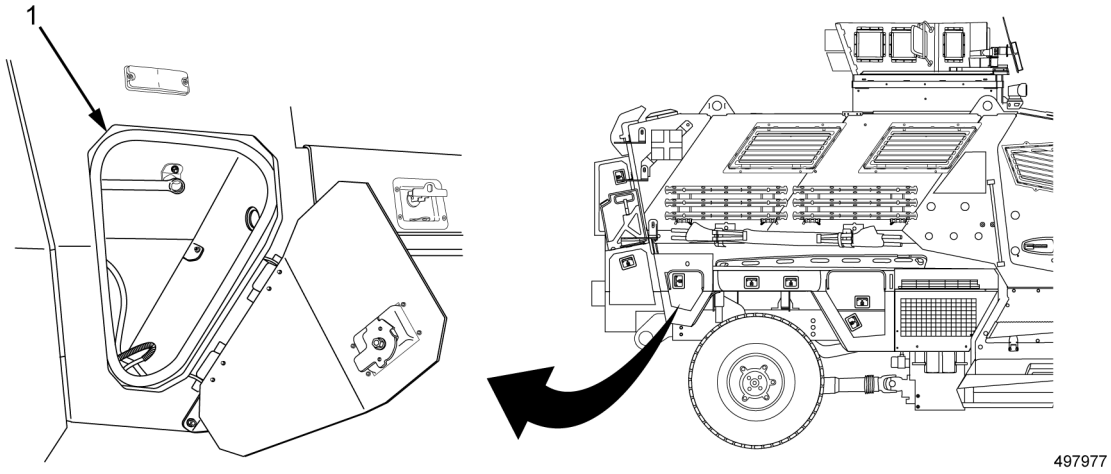


Figure 9. Commander Side Middle Stowage Box.

Table 9. Commander Side Middle Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	Adapter, Grease Gun Coupling	1	4930-00-288-1511
1	Adapter, Grease Gun Coupling	1	4930-00-204-2550
1	Belt, Vehicular Safety	1	2540-01-593-9739
1	Tool Bag	1	5140-00-473-6256

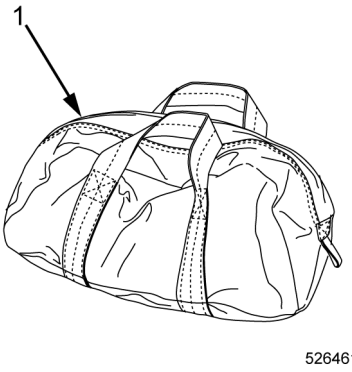


Figure 10. Tool Bag (Located in Commander Side Center Rear Stowage Box).

Table 10. Tool Bag (Located in Commander Side Center Rear Stowage Box).

ITEM NO.	ITEM NAME	QTY	NSN
1	Wire Brush	1	7920-00-269-1259
1	Socket Wrench Extension 5 in. Long, 1/2 in. Drive	1	5120-01-335-1050
1	Socket Wrench Extension 10 in. Long, 1/2 in. Drive	1	5120-00-227-8074
1	Socket Wrench Extension 8 in. Long, 3/4 in. Drive	1	5120-00-243-7328
1	Hand Hammer	1	5120-00-061-8546
1	Socket Wrench Handle 9 in. Long, 1/2 in. Drive	1	5120-00-230-6385
1	Socket Head Screw Key Set	1	5120-01-335-1508
1	Pliers	1	5120-00-239-8251
1	Slip Join Pliers	1	5120-00-223-7397
1	Cross Tip #2 Screwdriver	1	5120-00–234-8913
1	Cross Tip #3 Screwdriver	1	5120-00-234-8912
1	Flat Tip #2 Screwdriver	1	5120-00-278-1283
1	Socket Wrench Socket 1/2 in. Drive, 7/16 in., 12 pt	1	5120-00-237-0984
1	Socket Wrench Socket 1/2 in. Drive, 1/2 in., 6 pt	1	5120-01-398-7937
1	Socket Wrench Socket 1/2 in. Drive, 9/16 in., 12 pt	1	5120-00-189-7932
1	Socket Wrench Socket 1/2 in. Drive, 5/8 in., 12 pt	1	5120-00-189-7946
1	Socket Wrench Socket 1/2 in. Drive, 3/4 in., 12 pt	1	5120-00-189-7985
1	Socket Wrench Socket 1/2 in. Drive, 7/8 in., 12 pt	1	5120-00-189-7934
1	Socket Wrench Socket 1/2 in. Drive, 15/16 in., 6 pt	1	5130-00-714-0600
1	Socket Wrench Socket 1/2 in. Drive, 10 mm, 6 pt	1	5120-01-349-1042
1	Socket Wrench Socket 1/2 in. Drive, 13 mm, 6 pt	1	5120-01-398-8033
1	Socket Wrench Socket 1/2 in. Drive, 14 mm, 6 pt	1	5120-01-348-9033
1	Socket Wrench Socket 1/2 in. Drive, 16 mm, 6 pt	1	5120-01-348-9035
1	Socket Wrench Socket 1/2 in. Drive, 18 mm, 6 pt	1	5120-01-348-9037
1	Socket Wrench Socket 1/2 in. Drive, 19 mm, 6 pt	1	5120-01-398-7919
1	Adjustable Wrench 8 in. Long	1	5120-00-240-5328
1	Adjustable Wrench 12 in. Long	1	5120-00-264-3796
1	Plier Wrench	1	5120-00-494-1911
1	Padlock Set	4	5310-01-408-8452

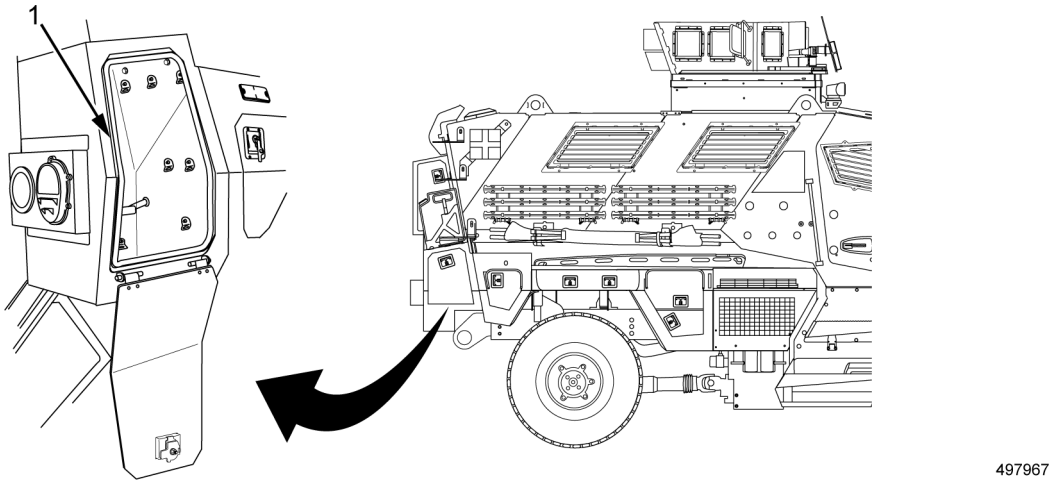


Figure 11. Commander Side Rear Stowage Box.

Table 11. Commander Side Rear Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	Oxygen USP 95 GAL* (Travel location when not required for patient care)	1	6505-00-132-5181
1	Splint Traction-Extrication *	2	6515-01-250-8936
1	Wheel Chock	2	2540-01-500-6119
1	Hand Lubricating Gun	1	4930-00-253-2478
1	Funnel	1	7240-00-559-7364
1	Fire Extinguisher	1	4210-01-577-3170
1	Tie Down, Cargo, Vehicle	12	3990-01-603-9081
1	Flexible Spout Can	1	7240-00-177-6154
1	Electrical Power Cable Assembly	1	6150-01-222-7943
1	Tire Chain Assembly	2	2540-01-597-3332
1	Strap, Webbing	30	2540-01-600-6845

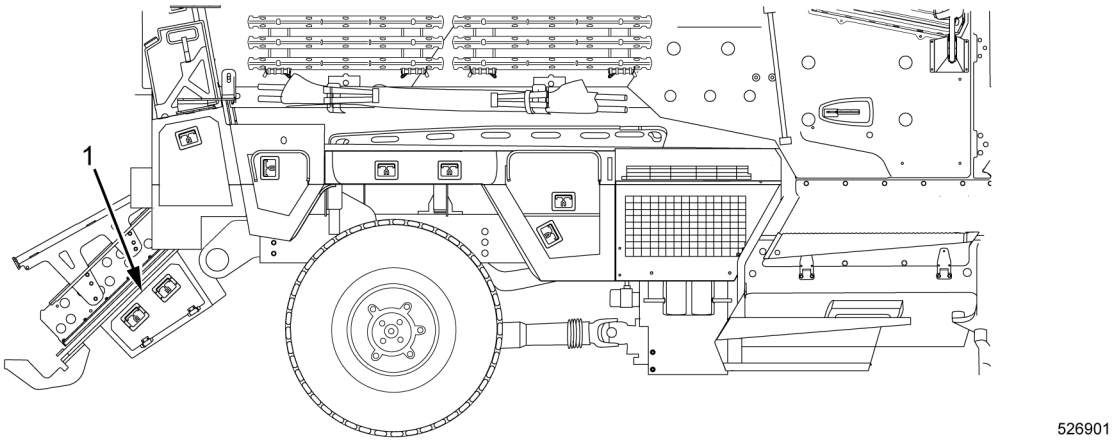


Figure 12. Commander Rear Door/Ramp Stowage Boxes.

Table 12. Commander Rear Door/Ramp Stowage Boxes.

ITEM NO.	ITEM NAME	QTY	NSN
1	Extraction Device (Upper Box) *	1	6530-01-365-3583
1	Rescue & Transport System (Lower Box) *	1	6530-01-260-1222

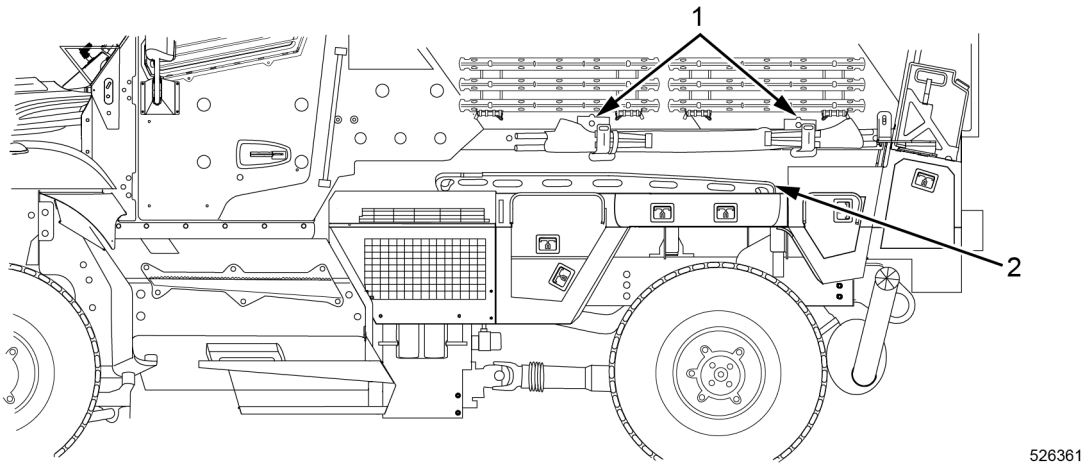


Figure 13. Driver Side Folding Rigid Litters and Spineboard Without RPG Nets.

Table 13. Driver Side Folding Rigid Litters and Spineboard Without RPG Nets.

ITEM NO.	ITEM NAME	QTY	NSN
1	Litter Folding Rigid *	2	6530-01-380-7309
2	Spineboard *	1	6530-01-490-2487

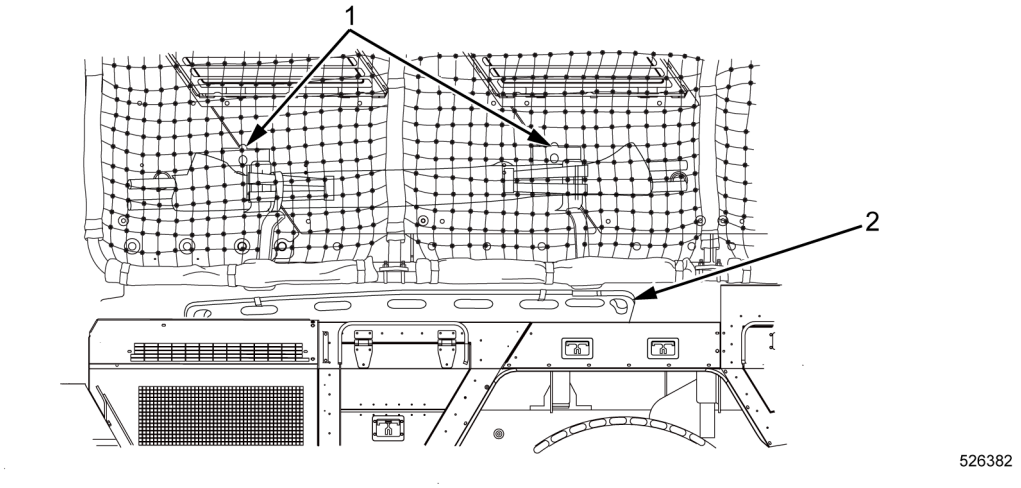


Figure 14. Driver Side Folding Rigid Litters and Spineboard With RPG Nets.

Table 14. Driver Side Folding Rigid Litters and Spineboard With RPG Nets.

ITEM NO.	ITEM NAME	QTY	NSN
1	Litter Folding Rigid *	2	6530-01-380-7309
2	Spineboard *	1	6530-01-490-2487

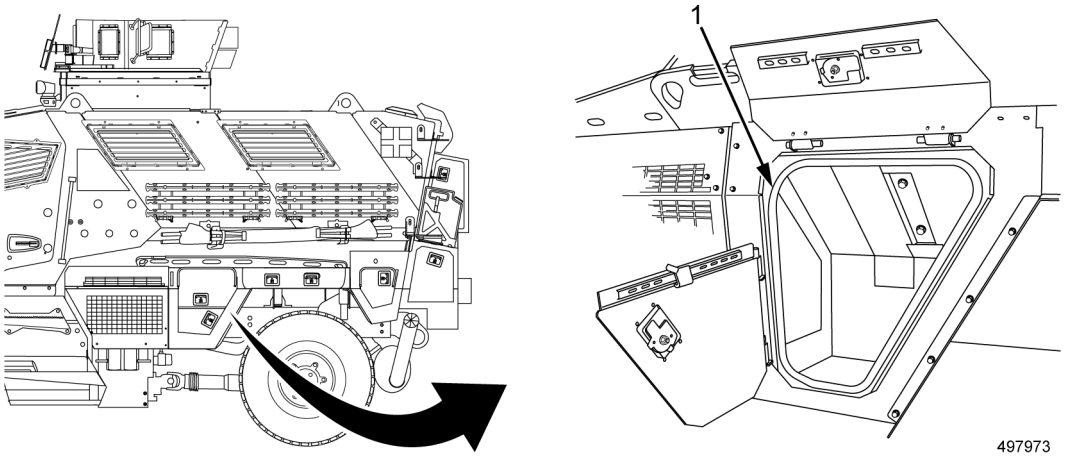


Figure 15. Driver Side Forward Stowage Box.

Table 15. Driver Side Forward Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	Combination Tool Broad Pick Attachment	1	5120-01-416-8572
1	Combination Tool Lock Pin Set	10	5120-01-416-8575
1	Hand Tool Combination	1	5120-01-416-8568
1	General Purpose First Aid Kit	1	6545-00-922-1200
1	Combination Tool Mattock Attachment	1	5120-01-416-8571
1	Combination Tool Pick Attachment	1	5120-01-416-8573
1	Combination Tool Rake-Hoe Attachment	1	5120-01-416-8577
1	Triangular Highway Warning Reflector Set	1	9905-00-148-9546
1	Tools and Accessories Roll	1	5140-01-416-8569
1	Combination Tool Attachment Shovel	1	5120-01-416-8570
1	Oiler, Hand Held	1	5120-01-604-5519
1	Shackle	1	4030-01-568-5913
1	Controller, Winch	1	6110-01-568-6312

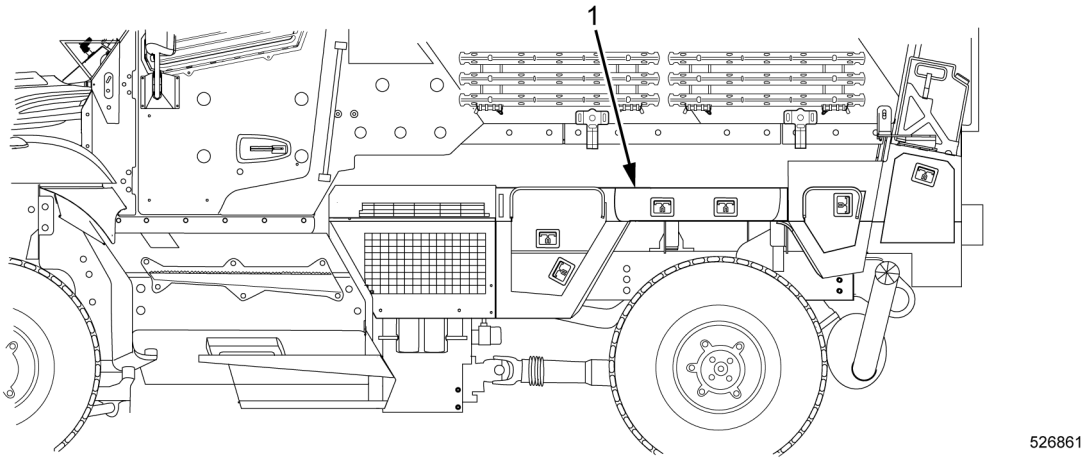


Figure 16. Driver Side Center Forward Stowage Box.

Table 16. Driver Side Center Forward Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	Strap, Immobilization*	1	6530-01-593-0010
1	Strap, Webbing, Patient Securing*	6	6530-00-784-4205

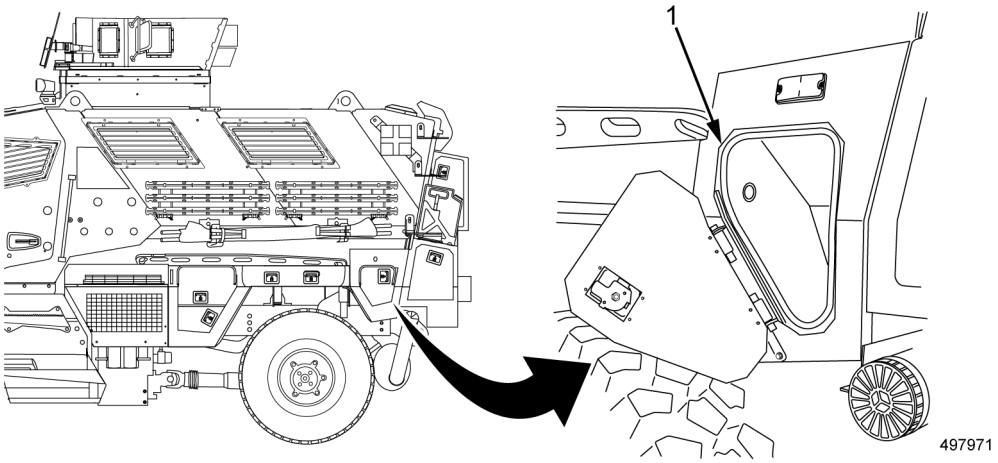


Figure 17. Driver Side Center Rear Stowage Box.

Table 17. Driver Side Center Rear Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	Splint Fracture CT-6 *	1	6515-01-521-5730
1	Support Pelvic *	2	6515-01-560-0290
1	Extraction Device Two Handle *	2	6530-01-598-9595
1	Marker Panel	1	8340-00-174-6865
1	Blanket, Fire	1	4210-01-324-2734

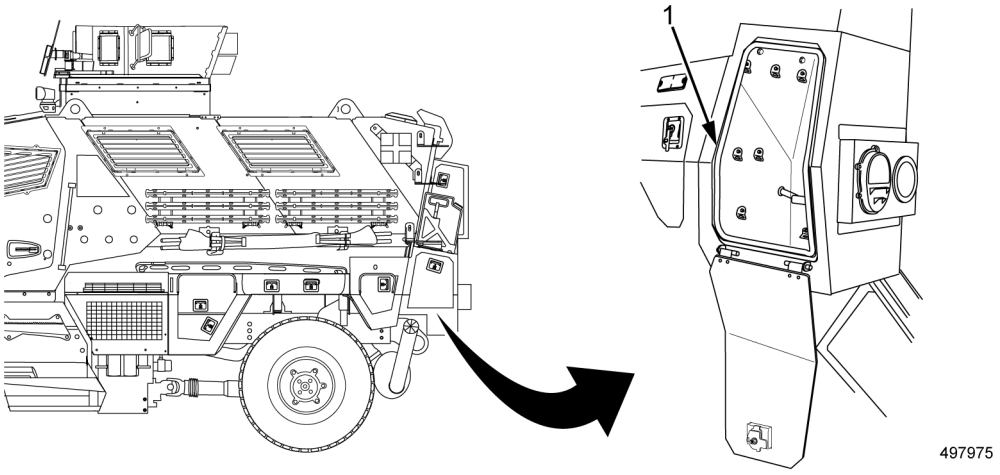


Figure 18. Driver Side Rear Stowage Box.

Table 18. Driver Side Rear Stowage Box.

ITEM NO.	ITEM NAME	QTY	NSN
1	Oxygen USP 95 GAL (Primary Location) *	1	6505-00-132-5181
1	Tire Chain Assembly (2)	2	2540-01-597-3332
1	Fire Extinguisher	1	4210-01-577-3170
1	Lock Removal Device (UCLT)	1	4240-01-574-0491
1	Single Leg Wire Rope Assembly	1	4010-01-556-5581
1	Multiple Leg Sling	1	3940-01-270-3389
1	Nonmetallic Hose Assembly	1	4720-01-391-8290
1	Nonmetallic Hose Assembly	1	4720-01-391-8291
1	Pneumatic Tire Inflator	1	4910-01-038-2820

INTERIOR STOWAGE LOCATIONS

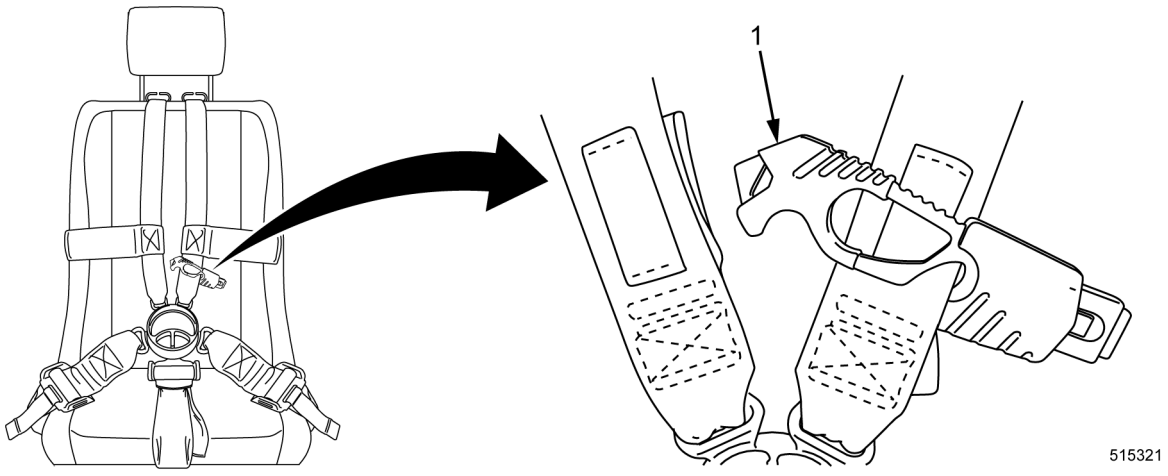


Figure 19. Driver, Commander, and Passenger Seats.

Table 19. Driver, Commander, and Passenger Seats.

ITEM NO.	ITEM NAME	QTY	NSN
1	Cutter Cable, Vehicle Mounted	6	2590-01-576-2424

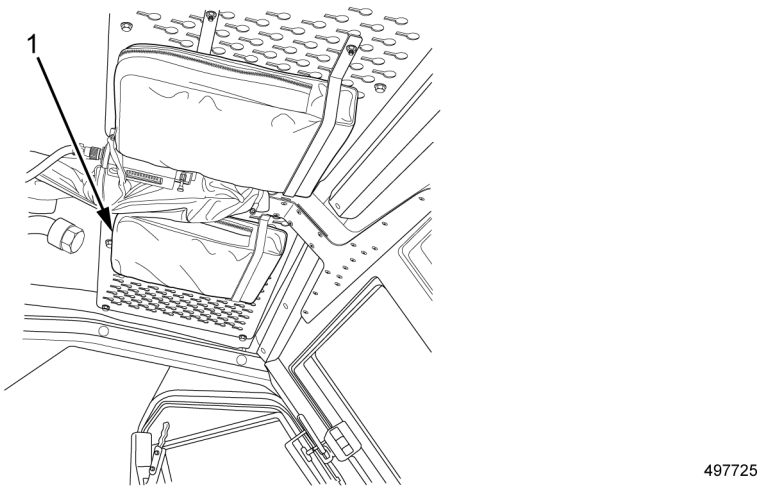


Figure 20. Driver Side Front Cab Ceiling Storage Bag.

Table 20. Driver Side Front Cab Ceiling Storage Bag.

ITEM NO.	ITEM NAME	QTY	NSN
1	Operator Manual, MRAP M1266A1	1	N/A

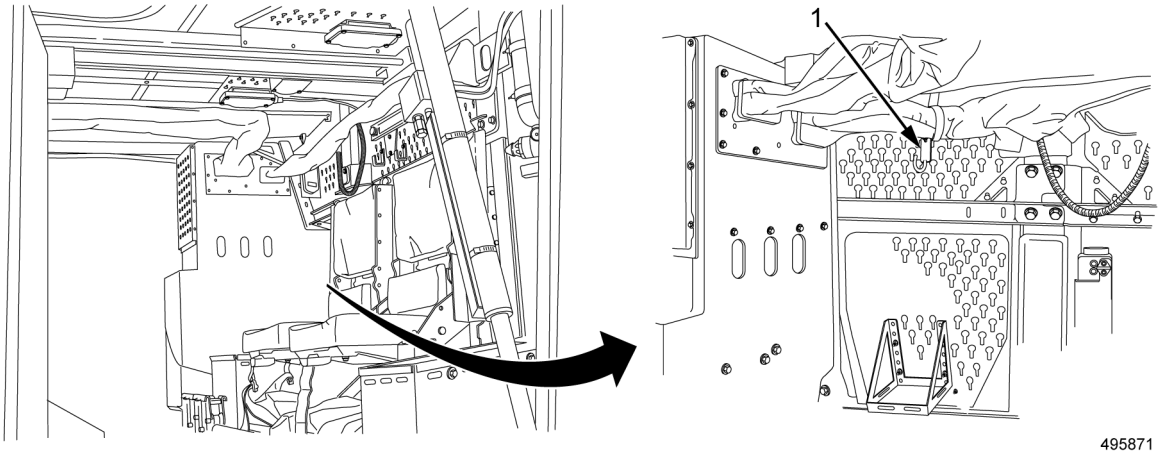


Figure 21. Commander Side Forward Wall.

Table 21. Commander Side Forward Wall.

ITEM NO.	ITEM NAME	QTY	NSN
1	Insert System Med Back Pk * (Location when extended to provide patient care)	1	N/A

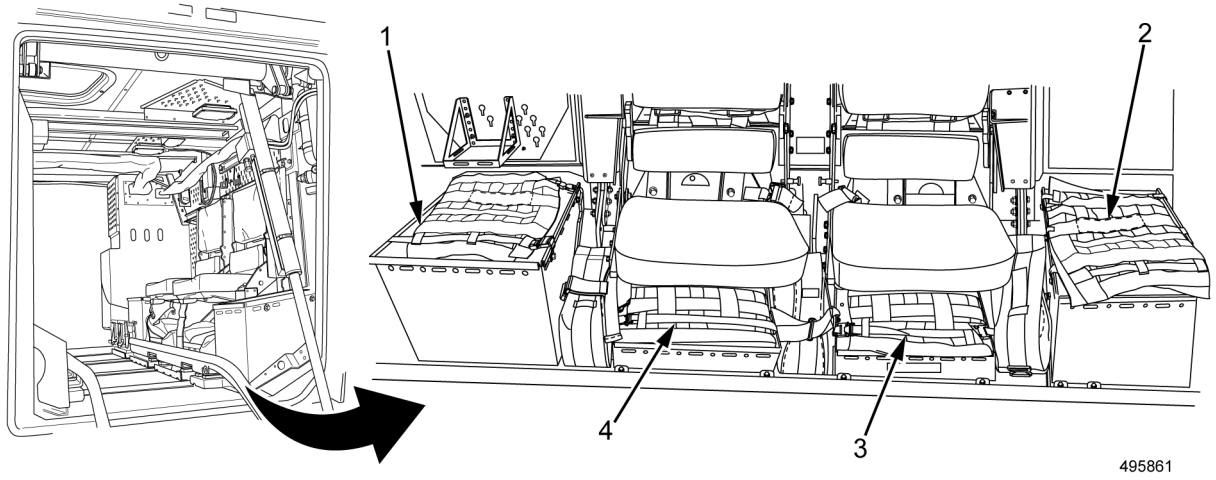


Figure 22. Commander Side Passenger Stowage.

Table 22. Commander Side Passenger Stowage.

ITEM NO.	ITEM NAME	QTY	NSN
1	Insert System Med Back Pk * (Location when stored)	1	6530-01-537-2692
1	Bag Carrying 02 *	1	6515-01-578-9524
2	Bag T3, Combat Casualty * Outer Case, Trauma Panel	2	6545-01-537-0686
2	Bag, T3, Combat Casualty * Outer Case, Trauma Panel	1	6545-01-537-0686
3	Removable Pouches (Hypothermia Trauma) * (Sub-Parts of Panel, Modular Med Tra 6530-01-515-7651)	2	N/A
4	Removable Pouches (Bleeeding, Splinting, Airway)* (Sub-Parts of Panel, Modular Med Tra 6530-01-515-7651)	3	N/A

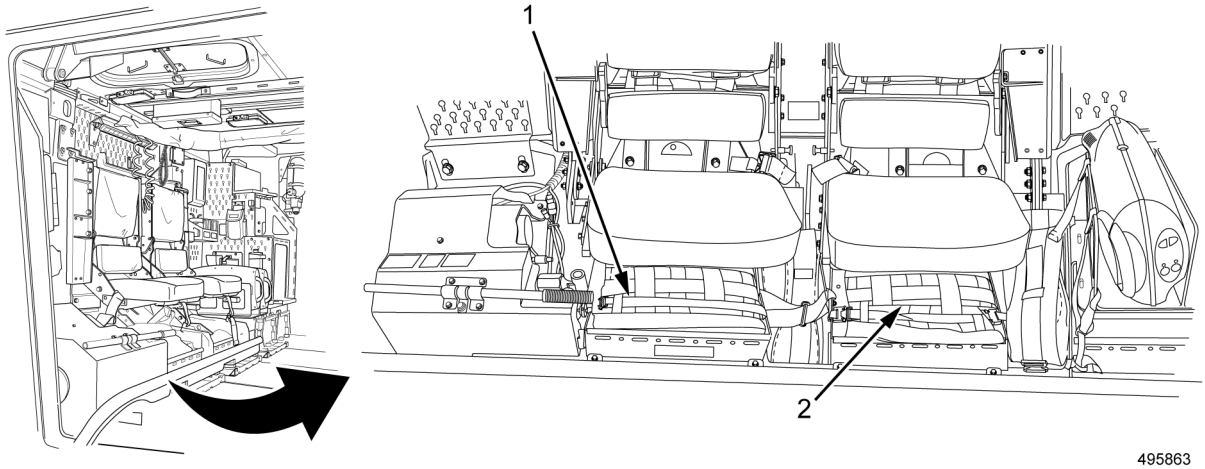


Figure 23. Driver Side Passenger Floor Boxes.

Table 23. Driver Side Passenger Floor Boxes.

ITEM NO.	ITEM NAME	QTY	NSN
1	Removable Pouches (O2 Therapy, Breathing, Bleeding) * (Sub-Parts of Panel, Modular Med Tra 6530-01-515-7651)	3	N/A
2	Removable Pouches (Burn Care, Breathing) * (Sub-Parts of Panel, Modular Med Tra 6530-01-515-7651)	2	N/A
2	Blood Fluid Warmer Kit (110V AC)	1	6515-01-599-6715

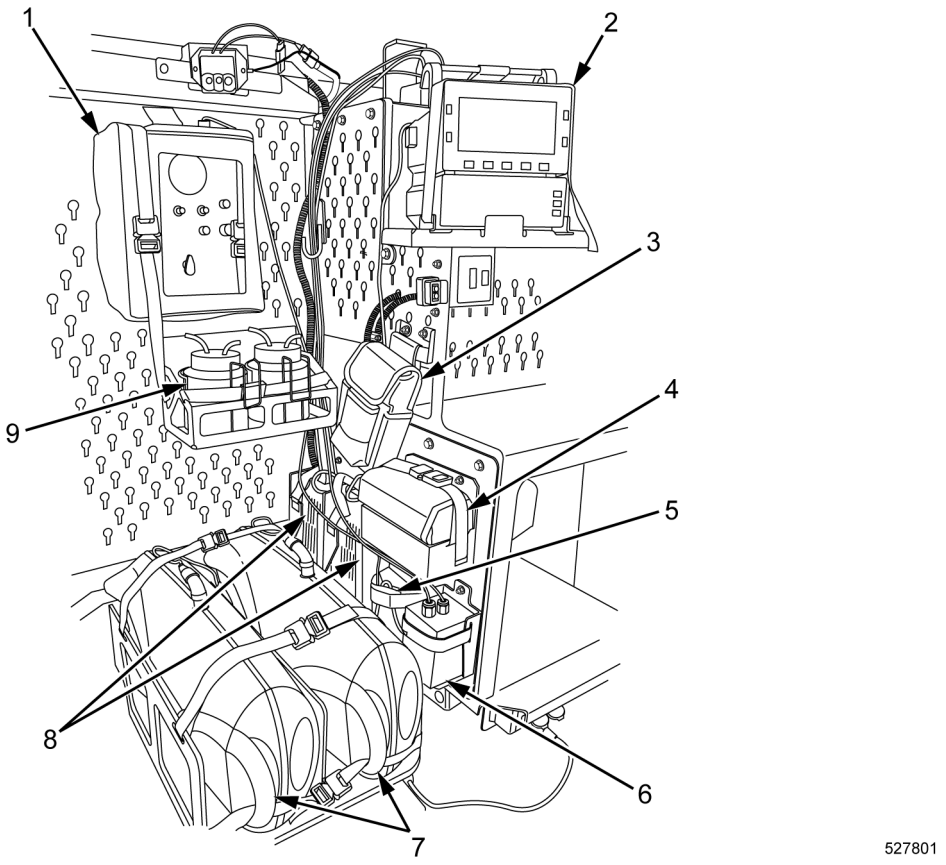


Figure 24. Driver Side Passenger Wall Mounted (Overall).

Table 24. Driver Side Passenger Wall Mounted (Overall).

ITEM NO.	ITEM NAME	QTY	NSN
1	Suction Apparatus (110V AC) *	1	6515-01-435-0050
2	Vital Signs Monitor (VSM) (110V AC) *	1	6515-01-432-2707
3	Thermometer Kit, Clinical, Human *	1	6515-01-523-9935
4	Blood Fluid Warmer Kit Power Supply * (Sub Part of Blood Fluid Warmer Kit, 6515-01-599-6715)	1	N/A
5	VSM Power Supply (Sub-Part of VSM, Item 2) *	1	N/A
6	Suction Apparatus Power Supply * (Sub Part of Suction Apparatus, Item 1)	1	N/A
7	Oxygen Concentrators (110V AC) *	2	6515-01-531-3065 OR 6515-01-582-2738
8	Oxygen Concentrators Power Supply * (Sub-Part of Oxygen Concentrators, Item 7)	2	N/A
9	Suction Bottles (Sub Part of Suction Apparatus, Item 1) *	2	N/A

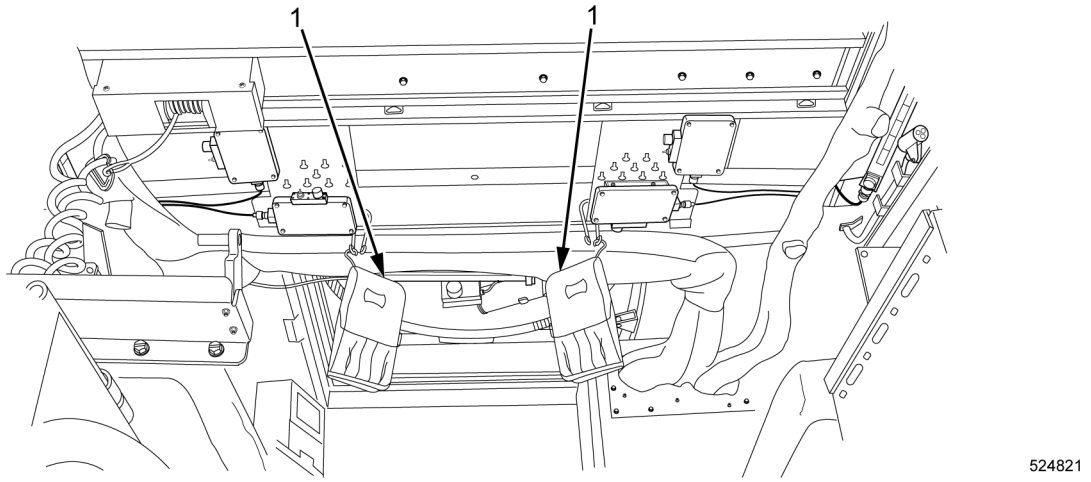


Figure 25. Front Passenger Compartment Ceiling.

Table 25. Front Passenger Compartment Ceiling.

ITEM NO.	ITEM NAME	QTY	NSN
1	Intervenous Holder Bags * (Operational Location)	2	6505-00-132-5181

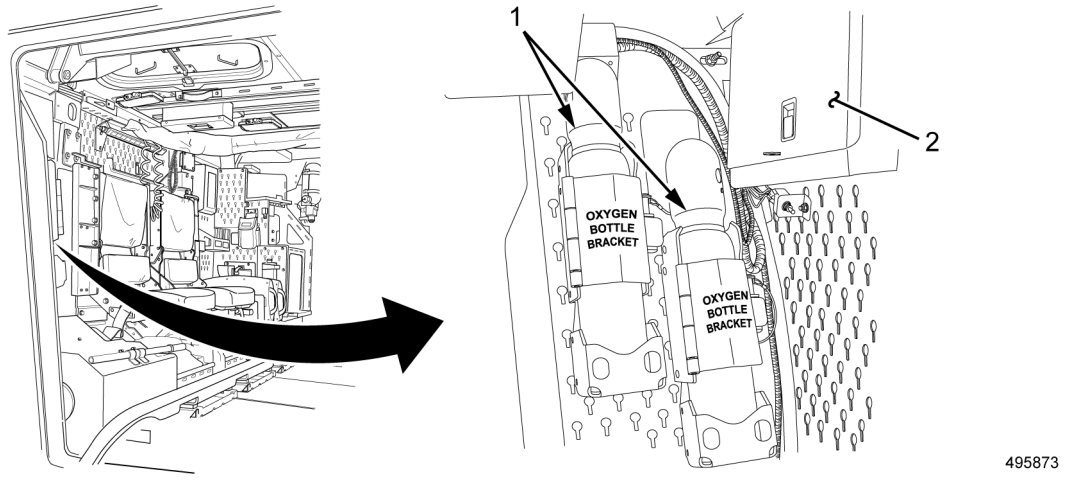


Figure 26. Driver Side Passenger Compartment Rear Wall.

Table 26. Driver Side Passenger Compartment Rear Wall.

ITEM NO.	ITEM NAME	QTY	NSN
1	Oxygen USP 95 GAL * (Patient Treatment Location)	2	6505-00-132-5181
2	Medications (Controlled)	10	N/A

END OF WORK PACKAGE

CHAPTER 3

TROUBLESHOOTING PROCEDURES

FOR

MINE RESISTANT AMBUSH PROTECTED (MRAP) VEHICLE

CREW MAINTENANCE

TROUBLESHOOTING INTRODUCTION

TROUBLESHOOTING INTRODUCTION

The following work packages list common malfunctions for the Mine Resistant Ambush Protected (MRAP) M1266A1 that may be found during operation or maintenance of the vehicles and their components. Test/Inspections and corrective actions should be performed in the order listed.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify Field Level Maintenance.

Perform related Preventive Maintenance Checks and Services inspections prior to using troubleshooting work packages. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

Never overlook the possibility that the problem could be of simple origin, which could be corrected with minor adjustments.

When troubleshooting a malfunction:

1. Locate the symptom or symptoms that best describe the malfunction in WP 0076, Troubleshooting Index. If the appropriate symptom is not listed, notify Field Level Maintenance.
2. Perform each malfunction in sequence in the symptom until the symptom is corrected.
3. Perform each step in sequence for each malfunction listed under the symptom, and any referenced work package(s) until the symptom is corrected. Do not perform any maintenance task unless directed to do so.

END OF WORK PACKAGE

CREW MAINTENANCE

TROUBLESHOOTING INDEX

Malfunction/Symptom	Troubleshooting Procedure
Air Pressure System Symptoms	
1. CTIS Driver's Display Module (DDM) OVERSPEED warning indicator is lit	**WP 0084**
2. CTIS DDM is alternating between TERRAIN and RF	**WP 0084**
3. CTIS does not operate	**WP 0084**
4. CTIS Front (FRT), Rear (RR), or trailer (TLR) CHECK TIRE warning indicator or DDM is constantly blinking and hissing sound is heard	**WP 0084**
5. Trailer brakes do not apply when service brake pedal or parking brake is applied	**WP 0084**
6. With engine running, AIR pressure gauges show 65 psi (448 kPa) or less, and AIR pressure gauge RED indicator lights are on	**WP 0084**
Ambulance Equipment Symptoms	
7. Litter Lift does not move on rail	**WP 0086**
8. Litter Lift does not operate	**WP 0086**
9. Litter Trolley does not operate	**WP 0086**
10. No power to ambulance equipment	**WP 0086**
Automatic Fire Extinguishing System (AFES) and Fire Suppression System (FSS) Symptoms	
11. AFES Battery Backup Unit (BBU) LED is RED or OFF	**WP 0082**
12. AFES CREW TROUBLE LED is illuminated solid	**WP 0082**
13. AFES did not automatically activate with CREW or ENGINE fire present	**WP 0082**
14. AFES ENGINE TROUBLE LED is illuminated solid	**WP 0082**
15. AFES ON LED is not illuminated or begins blinking	**WP 0082**
16. FSS did not manually activate when switch was moved to the ON position.	**WP 0082**
17. One or more FSS Indicator LEDs are not illuminated.	**WP 0082**
Electrical System Symptoms	
18. 110V Power Inverter does not operate	**WP 0078**
19. 12V auxiliary power sockets do not operate	**WP 0078**
20. Dome light for front crew only does not operate	**WP 0078**
21. Electronic Stability Control (ESC) does not operate	**WP 0078**
22. ENG BRAKE does not operate	**WP 0078**
23. FRONT AXLE does not operate	**WP 0078**
24. Spotlight does not operate	**WP 0078**
25. LSS/HVAC does not operate	**WP 0078**
26. IR CONTROL does not operate	**WP 0078**
27. MIR HEAT does not operate	**WP 0078**
28. MIRROR CONTROLS do not operate	**WP 0078**
29. MVLS does not operate	**WP 0078**
30. REAR DIFF LOCK does not operate	**WP 0078**
31. One or more rear passenger overhead lights do not operate	**WP 0078**
32. REAR RAMP CONTROL does not operate	**WP 0078**
33. Trailer tow lighting circuit does not operate	**WP 0078**
34. VOLTS gauge for 12V reading less than normal with engine running	**WP 0078**
35. VOLTS gauge for 24V reading less than normal with engine running	**WP 0078**
36. Windshield Wiper/Washer does not operate	**WP 0078**
37. XFER HI/LOW does not operate	**WP 0078**
Engine Symptoms	
38. RED ENGINE light on instrument panel is illuminated	**WP 0077**
39. Engine cranks but fails to start	**WP 0077**
40. Engine fails to crank when ignition switch is turned to START	**WP 0077**
41. Engine overheats	**WP 0077**

42. Engine runs rough after proper warm-up, does not develop full power, or produces excessive exhaust smoke . . . . . WP 0077
43. Engine shuts down while running . . . . . WP 0077
44. Excessive engine oil consumption. . . . . WP 0077

Fuel Fired Heater Symptoms
45. Fuel fired heater does not operate . . . . . WP 0080

Objective Gunner Protection Kit (OGPK) System Symptoms
46. ITDS Battery LED indicator does not illuminate . . . . . WP 0085
47. Entire ITDS battery LED indicator flashes . . . . . WP 0085
48. Holding brake controller will not switch from one setting to the other . . . . WP 0085
49. OGPK will not stop traversing in POWER mode after joystick controller is released . . . . . WP 0085
50. OGPK will not traverse in MANUAL mode . . . . . WP 0085
51. OGPK will not traverse in POWER mode. . . . . WP 0085
52. Only bottom ITDS Battery LED indicator bar illuminates and is flashing . . WP 0085

Steering and Suspension Symptoms
53. Suspension makes loud noise going over bumps . . . . . WP 0081
54. Suspension makes noise going over bumps and while driving . . . . . WP 0081
55. Vehicle is hard to steer, or steering is slow to respond or has intermittent assist . . . . . WP 0081
56. Vehicle is not stable or hard to steer while turning . . . . . WP 0081
57. Vehicle wanders or pulls to one side . . . . . WP 0081
58. Wheel wobbles or steering shimmies . . . . . WP 0081

Transmission Symptoms
59. AMBER CHECK TRANS light remains on after start-up . . . . . WP 0079
60. Cannot select DRIVE (D) or REVERSE (R) on transmission gear selector . WP 0079
61. CHECK TRANS light illuminated and transmission gear selector display is flashing current drive range selection . . . . . WP 0079
62. Transmission noisy when operating . . . . . WP 0079
63. TRANS temperature gauge indicates overheating above 250°F (121°C), or TRANS temperature gauge RED indicator light, or AMBER CHECK TRANS light ON during operation. . . . . WP 0079
64. Vehicle will not move in DRIVE (D) or REVERSE (R) . . . . . WP 0079

Winch System Symptoms
65. Unable to pull cable out by hand . . . . . WP 0083
66. Winch cable will not move using remote control . . . . . WP 0083
67. Winch motor functions, but cable does not move . . . . . WP 0083
68. Winch stops during operating. . . . . WP 0083
69. Winch unusually noisy when operating. . . . . WP 0083

END OF WORK PACKAGE

CREW MAINTENANCE

ENGINE SYSTEM TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)
Rag, wiping (WP 0110, Item 25)

References
WP 0004
WP 0011
WP 0034
WP 0067
WP 0072
WP 0088
WP 0089
WP 0090
WP 0091
WP 0092
WP 0093

TROUBLESHOOTING PROCEDURE

ENGINE FAILS TO CRANK

WARNING

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with standard operating procedures. Handle, store, and dispose of drained fluids in accordance with standard operating procedures. Failure to comply may result in injury to personnel and environmental damage.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with standard operating procedures. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Be alert at all times for the smell of fuel. Hot engine and components can ignite fuel. If fuel smell is detected while operating vehicle, shut down vehicle immediately. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Cooling system components become pressurized and extremely hot during normal operation. To prevent serious injury from hot coolant or scalding steam that escapes when removing radiator cap, radiator overflow cap, or deaeration tank pressure cap; ensure to allow engine to cool for 15 minutes, wrap a thick cloth around cap to be removed, loosen cap slowly one-quarter to one-half turn counterclockwise, pause to allow pressure to release, then continue to turn cap counterclockwise to remove. Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

SYMPTOM

Engine fails to crank when ignition switch is turned to START.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

a. If MAIN POWER switch fails to remain ON, notify Field Level Maintenance.

MALFUNCTION

TRANSMISSION GEAR SELECTOR IS NOT IN NEUTRAL (N).

CORRECTIVE ACTION

STEP 1. Check that transmission gear selector is in NEUTRAL (N). If required, select NEUTRAL (N) on transmission gear selector. Refer to WP 0011, Operation Under Usual Conditions – Engine Start Procedure - Above 32°F (0°C) .

a. If transmission gear selector will not remain in NEUTRAL (N), notify Field Level Maintenance.

MALFUNCTION

WEAK OR DEAD BATTERY, CLICKING SOUND MAY BE HEARD WHEN ATTEMPTING TO START VEHICLE.

CORRECTIVE ACTION

STEP 1. Slave start vehicle. Refer to WP 0067, Emergency Operation - Slave Starting Vehicle.

a. If vehicle fails to start, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

ENGINE CRANKS BUT FAILS TO START

SYMPTOM

Engine cranks but fails to start.

MALFUNCTION

FUEL TANK IS EMPTY.

CORRECTIVE ACTION

STEP 1. Check fuel level gauge. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If fuel is empty, refer to WP 0034, Operation Under Usual Conditions - Vehicle Fueling Operation.

STEP 2. Re-attempt to start vehicle. Refer to WP 0072, Emergency Operation - Engine Out of Fuel (Restart Procedures).

a. If empty, refer to WP 0072, Emergency Operation – Engine Out of Fuel (Restart Procedures).

MALFUNCTION

AIR FILTER RESTRICTION GAUGE READS 22 OR ABOVE.

CORRECTIVE ACTION

STEP 1. Check AIR FILTER RESTRICTION gauge. Refer to WP 0091, Air Cleaner Assembly Service.

a. If AIR FILTER RESTRICTION gauge reads 22 or above, service air cleaner assembly. Refer to WP 0091, Air Cleaner Assembly Service.

b. If AIR FILTER RESTRICTION gauge still reads 22 or above, notify Field Level Maintenance.

MALFUNCTION

ENGINE OIL LEVEL IS LOW.

CORRECTIVE ACTION

STEP 1. Check engine oil. Refer to WP 0090, Engine Oil Service.

STEP 2. Re-attempt to start vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

MALFUNCTION

FUEL/WATER SEPARATOR CONTAINS WATER AND/OR CONTAMINATION.

CORRECTIVE ACTION

STEP 1. Drain water and contaminated fuel from fuel/water separator until clean fuel flows out. Refer to WP 0092, Fuel/Water Separator Draining.

STEP 2. Re-attempt to start vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

MALFUNCTION

EXHAUST IS RESTRICTED.

CORRECTIVE ACTION

STEP 1. Inspect exhaust system for kinks, dents, or restrictions. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS)

a. If exhaust system has restrictions that cannot be removed or other damage, notify Field Level Maintenance.
b. If exhaust system is not damaged or restricted and engine still fails to start, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

ENGINE SHUTS DOWN WHILE RUNNING

SYMPTOM

Engine shuts down while running.

MALFUNCTION

FUEL GAUGE INDICATES FUEL TANK IS EMPTY.

CORRECTIVE ACTION

STEP 1. Check fuel level. If empty, refer to WP 0034, Operation Under Usual Conditions - Vehicle Fueling Operation.

STEP 2. Start vehicle. Refer to WP 0072, Emergency Operation - Engine Out of Fuel (Restart Procedures).

MALFUNCTION

ENGINE OIL LEVEL IS LOW.

CORRECTIVE ACTION

STEP 1. Check engine oil. Refer to WP 0090, Engine Oil Service.

STEP 2. Re-attempt to start vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

a. If engine still fails to start, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

RED ENGINE LIGHT ON INSTRUMENT PANEL IS ILLUMINATED

SYMPTOM

RED ENGINE light on instrument panel is illuminated.

MALFUNCTION

ENGINE OIL LEVEL IS LOW.

CORRECTIVE ACTION

STEP 1. Check engine oil. Refer to WP 0090, Engine Oil Service.

STEP 2. Re-attempt to start vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

a. If RED ENGINE light on Instrument Panel (IP) remains ON, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

ENGINE RUNS ROUGH AFTER PROPER WARM-UP, DOES NOT DEVELOP FULL POWER, OR PRODUCES EXCESSIVE EXHAUST SMOKE

SYMPTOM

Engine runs rough after proper warm-up, does not develop full power, or produces excessive exhaust smoke.

MALFUNCTION

AIR FILTER RESTRICTION GAUGE READS 22 OR ABOVE.

CORRECTIVE ACTION

STEP 1. Check AIR FILTER RESTRICTION gauge. Refer to WP 0091, Air Cleaner Assembly Service.

a. If AIR FILTER RESTRICTION gauge reads 22 or above, service air cleaner assembly. Refer to WP 0091, Air Cleaner Assembly Service.

b. If AIR FILTER RESTRICTION gauge still reads 22 or above, notify Field Level Maintenance.

MALFUNCTION

CHARGE AIR COOLER (CAC) FINS ARE PLUGGED WITH DIRT OR MUD.

CORRECTIVE ACTION

STEP 1. Clean CAC fins. Refer to WP 0089, Vehicle Cleaning.

MALFUNCTION

FUEL/WATER SEPARATOR CONTAINS WATER AND/OR CONTAMINATION.

CORRECTIVE ACTION

STEP 1. Drain water and contaminated fuel from fuel/water separator until clean fuel flows out. Refer to WP 0092, FUEL/WATER Separator Draining.

MALFUNCTION

FUEL/WATER SEPARATOR HOUSING IS LEAKING OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Check fuel/water separator housing for leaks or damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If fuel/water separator housing is leaking or damaged, notify Field Level Maintenance.

MALFUNCTION

FUEL LINES OR CONNECTIONS ARE LEAKING OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Check fuel lines and connections for leaks or damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If fuel lines or connections are leaking or damaged, notify Field Level Maintenance.

MALFUNCTION

EXHAUST SYSTEM HAS KINKS, DENTS, OR OTHER RESTRICTIONS.

CORRECTIVE ACTION

STEP 1. Inspect exhaust system for kinks, dents, or restrictions.

a. If exhaust system has restrictions that cannot be removed or other damage, notify Field Level Maintenance.

b. If exhaust system does not have damage, but engine still runs rough after proper warm-up, does not develop full power, or produces excessive exhaust smoke, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

ENGINE OVERHEATS

SYMPTOM

Engine overheats.

MALFUNCTION

COOLANT LEVEL IS LOW.

CORRECTIVE ACTION

STEP 1. Check coolant level. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

STEP 2. Start vehicle. Refer to WP 0011, Operation Under Usual Conditions – Engine Start Procedure – Above 32°F (0°C).

MALFUNCTION

RADIATOR OVERFLOW RESERVOIR, RADIATOR, OR HOSES ARE LEAKING OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Check radiator overflow reservoir, radiator, or hoses for damage. Refer to WP 0093, Coolant Service.

a. If radiator overflow reservoir, radiator, or hoses are leaking or damaged, notify Field Level Maintenance.

MALFUNCTION

RADIATOR GRILL OR COOLING FINS ARE OBSTRUCTED, DAMAGED, OR PLUGGED WITH DIRT.

CORRECTIVE ACTION

STEP 1. Check radiator grill or cooling fins for obstructions, damage or plugged with dirt. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If damaged, notify Field Level Maintenance.

MALFUNCTION

DEBRIS IS PRESENT BETWEEN RADIATOR AND CAC.

CORRECTIVE ACTION

STEP 1. Check radiator and CAC for debris. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

MALFUNCTION

SERPENTINE BELT IS DAMAGED OR CUT OR FAN BLADES ARE BROKEN OR MISSING.

CORRECTIVE ACTION

STEP 1. Check serpentine belts for frays, cracks, cuts, looseness, or wear. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If serpentine belts are damaged, notify Field Level Maintenance.

STEP 2. Check for broken or missing fan blades. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If fan blades are broken or missing, notify Field Level Maintenance.

b. If no damage exists and engine is still overheating, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

EXCESSIVE ENGINE OIL CONSUMPTION

SYMPTOM

Excessive engine oil consumption.

MALFUNCTION

OIL LEAKING.

CORRECTIVE ACTION

STEP 1. Visually check for oil leaks. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If leaks are found, notify Field Level Maintenance.

b. If no leaks are found, but symptom persists, notify Field Level Maintenance.

END OF WORK PACKAGE

CREW MAINTENANCE

ELECTRICAL SYSTEM TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

Personnel Required
Crewmember - (2)

References
WP 0004
WP 0011
WP 0015
WP 0018
WP 0020
WP 0022
WP 0028
WP 0029
WP 0030
WP 0031
WP 0049
WP 0088
WP 0095
WP 0103

TROUBLESHOOTING PROCEDURE

REAR RAMP CONTROL DOES NOT OPERATE

WARNING

Use extreme caution when testing or working on or around electrical circuits. Always assume that electrical circuits are live. Electrical shock can occur upon contact with voltage high enough to cause current flow through muscles or nerves. On Direct Current (DC) systems, generally 1 milliamp (mA) of current can be felt, 5 mA can cause severe pain, 15 mA can cause loss of muscle control, and 70 mA can be fatal. Wear protective clothing; ensure skin, clothing, and surrounding areas are dry; do not wear jewelry; and touch only the insulated, nonmetallic parts of electrical components and testing equipment. To prevent electrical arcing, avoid shorting electrical test probes and jumper wires. Electrical arcing can cause bright flashes of light, capable of causing temporary blindness. If electrical injury occurs, immediately shut off power supply and seek medical assistance. Failure to comply may result in serious injury or death to personnel.

Turn MAIN POWER switch OFF prior to performing maintenance on battery or electrical system. Wear safety goggles and long sleeves when working on or near batteries. Batteries contain corrosive acid and can produce explosive gases. Batteries supply electrical current that can cause burns and electrical shock. Avoid leaning over or onto battery. Do not wear jewelry and do not smoke or have open flame or spark near battery. Do not allow tools to contact battery box or battery terminals. Dispose of or recycle used batteries according to local procedures and waste management/battery recycling resources. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

Do not use a circuit breaker, fuse, or relay with higher amperage rating than listed for a particular application. Using higher amperage will overheat the electrical circuit, causing melted components and possible fire. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

SYMPTOM

REAR RAMP CONTROL does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate REAR RAMP CONTROL. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect RAMP circuit breaker on Power Distribution Module (PDM). Refer to WP 0095, Circuit Breaker Reset.

a. If RAMP circuit breaker is tripped, reset RAMP circuit breaker.

STEP 2. Re-attempt to operate REAR RAMP CONTROL. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation.

MALFUNCTION

REAR RAMP CONTROL PLUNGER IS SET INCORRECTLY.

CORRECTIVE ACTION

STEP 1. Verify Rear Door/Ramp control plunger on pump housing is in center position. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation.

a. If control plunger is not in center position, move to center position.

STEP 2. Re-attempt to operate REAR RAMP CONTROL. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation.

MALFUNCTION

REAR DOOR/RAMP HYDRAULIC CYLINDER HAS DAMAGED OR LOOSE FITTINGS.

CORRECTIVE ACTION

STEP 1. Visually inspect rear door/ramp hydraulic cylinder for leaks, loose fittings and damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If hydraulic cylinder is leaking, has a loose fitting, other damage, or rear door/ramp still fails to operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

INFRARED (IR) CONTROL DOES NOT OPERATE

SYMPTOM

IR CONTROL does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate IR CONTROLS. Refer to WP 0049, Operation Under Unusual Conditions - Night Vision Operation.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F37 on fuse and circuit breaker panel. Refer to WP 0095, Circuit Breaker Reset.

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

STEP 2. Re-attempt to operate IR CONTROLS. Refer to WP 0049, Operation Under Unusual Conditions - Night Vision Operation.

a. If system still does not operate or circuit breaker trips again, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

OVERHEAD LIGHTS FOR REAR PASSENGER ONLY DO NOT OPERATE

SYMPTOM

One or more REAR PASSENGER OVERHEAD LIGHTS do not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate rear passenger dome light. Refer to WP 0030, Operation Under Usual Conditions - Rear Passenger Light Operation.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F40 on fuse and circuit breaker panel. Refer to WP 0095, Circuit Breaker Reset.

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

STEP 2. Re-attempt to operate rear passenger dome light. Refer to WP 0030, Operation Under Usual Conditions - Rear Passenger Light Operation.

a. If circuit breaker trips again, notify Field Level Maintenance.

MALFUNCTION

DAMAGED OR LOOSE CANNON PLUG AT REAR PASSENGER OVERHEAD LIGHT.

CORRECTIVE ACTION

STEP 1. Check cannon plug connector for damage and proper connection to faulty rear passenger overhead light. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If loose cannon plug connectors are found, tighten cannon plug connector securely.

b. If cannon plug connector is damaged, notify Field Level Maintenance.

STEP 2. Re-attempt to operate rear passenger dome light. Refer to WP 0030, Operation Under Usual Conditions - Rear Passenger Light Operation.

a. If rear passenger dome light still does not operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

DOME LIGHTS FOR FRONT CREW ONLY DO NOT OPERATE

SYMPTOM

DOME LIGHT FOR FRONT CREW ONLY does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate front passenger dome light. Refer to WP 0029, Operation Under Usual Conditions - Front Passenger Light Operation.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F40 on fuse and circuit breaker panel. Refer to WP 0095, Circuit Breaker Reset.

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

STEP 2. Re-attempt to operate front passenger dome light. Refer to WP 0029, Operation Under Usual Conditions - Front Passenger Light Operation.

a. If circuit breaker trips again, notify Field Level Maintenance.

MALFUNCTION

DAMAGED OR LOOSE CANNON PLUG AT FRONT PASSENGER DOME LIGHT.

CORRECTIVE ACTION

STEP 1. Check cannon plug connector for damage and proper connection to faulty front passenger dome light. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If cannon plug connector is loose, tighten cannon plug connector securely.

b. If cannon plug connector is damaged, notify Field Level Maintenance.

STEP 2. Re-attempt to operate front passenger dome lights. Refer to WP 0029, Operation Under Usual Conditions - Front Passenger Light Operation.

a. If front passenger dome lights fail to operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

SPOTLIGHT DOES NOT OPERATE

SYMPTOM

Spotlight does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate spotlight. Refer to WP 0031, Operation Under Usual Conditions - Spotlight Operation.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F39 on fuse and circuit breaker panel. Refer to WP 0095, Circuit Breaker Reset.

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

STEP 2. Re-attempt to operate GO-LIGHT. Refer to WP 0031, Operation Under Usual Conditions – Spotlight Operation.

a. If system still does not operate or circuit breaker trips again, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

MASTER VEHICLE LIGHT SWITCH (MVLS) DOES NOT OPERATE

SYMPTOM

MVLS does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate MVLS. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F14 on fuse and circuit breaker panel. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset

STEP 2. Re-attempt to operate MVLS. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate or circuit breaker trips again, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

LIFE SUPPORT SYSTEM (LSS)/HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) DOES NOT OPERATE

SYMPTOM

LSS/HVAC does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate LSS/HVAC. Refer to WP 0028, Operation Under Usual Conditions – Life Support System (LSS)/Heating, Ventilation, and Air Conditioning (HVAC) Operation.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker NBC on PDM. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

STEP 2. Re-attempt to operate LSS/HVAC. Refer to WP 0028, Operation Under Usual Conditions – Life Support System (LSS)/Heating, Ventilation, and Air Conditioning (HVAC) Operation.

a. If system still does not operate or circuit breaker trips again, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

12V AUXILIARY POWER SOCKETS DO NOT OPERATE

SYMPTOM

12V auxiliary power sockets do not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate 12V auxiliary power sockets. Refer to WP 0022, Operation Under Usual Conditions -12V Auxiliary Equipment Outlet.

MALFUNCTION

12V AUXILIARY POWER SOCKETS ARE DAMAGED.

CORRECTIVE ACTION

STEP 1. Visually inspect 12V auxiliary power sockets for damage. Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If damage is found, notify Field Level Maintenance.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F15 or F16 on fuse and circuit breaker panel. Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

STEP 2. Re-attempt to operate 12V auxiliary power sockets. Refer to WP 0022, Operation Under Usual Conditions -12V Auxiliary Equipment Outlet.

a. If system still does not operate or circuit breaker trips again, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

110V POWER INVERTER DOES NOT OPERATE

SYMPTOM

110V Power Inverter does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to operate 110V Power Inverter. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.

MALFUNCTION

110V POWER INVERTER GROUND CABLE IS LOOSE, DAMAGED, OR CORRODED.

CORRECTIVE ACTION

STEP 1. Inspect ground cable connection at rear of 110V Power Inverter. Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If ground cable connection is loose, tighten ground cable securely.

STEP 2. Re-attempt to operate 110V Power Inverter. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.

a. If ground cable is damaged or corroded, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

WINDSHIELD WIPER/WASHER DOES NOT OPERATE

SYMPTOM

Windshield Wiper/Washer does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF, OR IGNITION SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Verify IGNITION SWITCH is on RUN. Refer to Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, Turn IGNITION SWITCH to RUN. Refer to Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 3. Re-attempt to operate Windshield Wiper/Washer. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

MIRROR CONTROLS DO NOT OPERATE

SYMPTOM

MIRROR CONTROLS do not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF, OR IGNITION SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Verify IGNITION SWITCH is on RUN. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, Turn IGNITION SWITCH to RUN. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 3. Re-attempt to operate mirror controls. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

MIR HEAT DOES NOT OPERATE

SYMPTOM

MIR HEAT does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF, OR IGNITION SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Verify IGNITION SWITCH is on RUN. Refer to Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, Turn IGNITION SWITCH to RUN. Refer to Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 3. Re-attempt to operate MIR HEAT. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F13 or F18 on fuse and circuit breaker panel. Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

STEP 2. Re-attempt to operate mirror controls. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate or circuit breaker trips again, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

ENG BRAKE DOES NOT OPERATE

SYMPTOM

ENG BRAKE does not operate.

MALFUNCTION

ENG BRAKE DOES NOT OPERATE.

CORRECTIVE ACTION

NOTE

Engine brake is disabled when cruise control is activated.

STEP 1. Verify operation of engine brake. Refer to WP 0015, Operation Under Usual Conditions - Engine Brake Operation.

a. If engine braking is not felt when descending grades, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

FRONT AXLE DOES NOT OPERATE

SYMPTOM

FRONT AXLE does not operate.

MALFUNCTION

ENGINE IS NOT RUNNING.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 3. Re-attempt to engage FRONT AXLE. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

REAR DIFF LOCK DOES NOT OPERATE.

SYMPTOM

REAR DIFF LOCK does not operate.

MALFUNCTION

ENGINE IS NOT RUNNING.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

a. If not, turn MAIN POWER switch ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 2. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 3. Re-attempt to engage REAR DIFF LOCK. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

XFER HI/LO DOES NOT OPERATE

SYMPTOM

XFER HI/LO does not operate.

MALFUNCTION

ENGINE IS NOT RUNNING.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

a. If not, turn MAIN POWER switch ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 2. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 3. Re-attempt to engage XFER HI or LO range. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

MALFUNCTION

VEHICLE IS NOT IN NEUTRAL (N).

CORRECTIVE ACTION

STEP 1. With engine running, place vehicle in NEUTRAL (N). Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt to engage XFER HI or LO range. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

VOLTS GAUGE FOR 24V DISPLAYS A READING LESS THAN 27V WITH ENGINE RUNNING

SYMPTOM

VOLTS gauge for 24V reading less than normal with engine running.

MALFUNCTION

CHARGING SYSTEM IS FAULTY.

CORRECTIVE ACTION

STEP 1. Verify operating range is between 27V and 29V. Refer to WP 0088, Preventive Maintenance Checks and Services.

STEP 2. Inspect batteries for missing, loose, or corroded terminals or cables. Refer to WP 0088, Preventive Maintenance Checks and Services.

STEP 3. Inspect serpentine belt for frays, cracks, loose fibers, and visible signs of wear. Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If system still does not operate properly, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

VOLTS GAUGE FOR 12V DISPLAYS A READING LESS THAN 12.5V WITH ENGINE RUNNING

SYMPTOM

VOLTS gauge for 12V reading less than normal with engine running.

MALFUNCTION

CHARGING SYSTEM IS FAULTY.

CORRECTIVE ACTION

STEP 1. Verify operating range is between 12.5V and 14.5V. Refer to WP 0088, Preventive Maintenance Checks and Services.

STEP 2. Inspect batteries for missing, loose, or corroded terminals or cables. Refer to WP 0088, Preventive Maintenance Checks and Services.

STEP 3. Inspect serpentine belt for frays, cracks, loose fibers, and visible signs of wear. Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If system still does not operate properly, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

TRAILER TOW LIGHTING CIRCUIT DOES NOT OPERATE

SYMPTOM

Trailer tow lighting circuit does not operate.

MALFUNCTION

MAIN POWER SWITCH AND/OR MVLS IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Verify MVLS is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MVLS ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 3. Re-attempt to operate trailer tow light circuit. Refer to WP 0103, Vehicle Towing.

a. If trailer tow lighting circuit still does not operate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

ELECTRONIC STABILITY CONTROL (ESC) DOES NOT OPERATE

SYMPTOM

ESC does not operate.

MALFUNCTION

ENGINE IS NOT RUNNING.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 2. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 3. Re-attempt to engage ESC. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If system still does not operate, notify Field Level Maintenance.

END OF WORK PACKAGE

CREW MAINTENANCE

TRANSMISSION TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

References
WP 0011
WP 0013
WP 0014
WP 0016
WP 0068
WP 0088
WP 0096

TROUBLESHOOTING PROCEDURE

AMBER CHECK TRANS LIGHT REMAINS ON AFTER START-UP

WARNING

Use care when working with hot transmission and fluid. Wear protective goggles, work gloves, and long sleeves to avoid injury. Avoid contact with hot transmission oil or sump when inspecting transmission. If transmission oil temperature is above 220°F (104°C), allow transmission oil to cool before removing dipstick. Failure to comply may result in serious injury or death to personnel.

SYMPTOM

AMBER CHECK TRANS light remains ON after start-up.

MALFUNCTION

TRANSMISSION HAS ELECTRICAL CONTROL OR INTERNAL MALFUNCTION.

CORRECTIVE ACTION

STEP 1. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

STEP 2. Wait 15 seconds.

STEP 3. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

a. If AMBER CHECK TRANS light comes on and remains on after start-up, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

CANNOT SELECT DRIVE (D) OR REVERSE (R) ON TRANSMISSION GEAR SELECTOR

SYMPTOM

Cannot select DRIVE (D) or REVERSE (R) on transmission gear selector.

MALFUNCTION

TRANSMISSION GEAR SELECTOR WILL NOT MOVE FROM NEUTRAL (N) TO OTHER GEARS.

CORRECTIVE ACTION

STEP 1. Attempt to place transmission gear selector in DRIVE (D) or REVERSE (R). Refer to WP 0016, Transmission Operation.

a. If unable to select gear, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

VEHICLE WILL NOT MOVE IN DRIVE (D) OR REVERSE (R)

SYMPTOM

Vehicle will not move in DRIVE (D) or REVERSE (R).

MALFUNCTION

PARKING BRAKE SET.

CORRECTIVE ACTION

STEP 1. Release parking brake. Refer to WP 0014, Operation Under Usual Conditions - Brake System and Anti-Lock Brake System (ABS) Operation.

MALFUNCTION

AIR LEAK IN BRAKE SYSTEM, BRAKE(S) ENGAGED.

CORRECTIVE ACTION

STEP 1. Confirm proper air pressure on air pressure gauges. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If air pressure does not maintain normal operation range, notify Field Level Maintenance.

MALFUNCTION

TRANSMISSION FLUID LEVEL IS INCORRECT.

CORRECTIVE ACTION

STEP 1. Verify transmission fluid level. Refer to WP 0096, Transmission Fluid Service.

a. If fault exists and fluid level is within range, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

TRANSMISSION NOISY WHEN OPERATING

SYMPTOM

Transmission noisy when operating.

MALFUNCTION

TRANSMISSION FLUID LEVEL IS INCORRECT.

CORRECTIVE ACTION

STEP 1. Verify transmission fluid level. Refer to WP 0096, Transmission Fluid Service.

a. If fault exists and fluid level is within range, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

TRANS TEMPERATURE GAUGE, OR TRANS TEMPERATURE GAUGE RED INDICATOR LIGHT, OR AMBER CHECK TRANS LIGHT INDICATES OVERHEATING DURING OPERATION

SYMPTOM

TRANS temperature gauge indicates overheating above 250°F (121°C), or TRANS temperature gauge RED indicator light, or AMBER CHECK TRANS light ON during operation.

MALFUNCTION

TRANSMISSION OIL COOLER AIR FLOW BLOCKED.

CORRECTIVE ACTION

STEP 1. Check for debris around radiator and Charge Air Cooler (CAC) blocking fresh air to transmission oil cooler. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

MALFUNCTION

TRANSMISSION FLUID LEVEL IS INCORRECT.

CORRECTIVE ACTION

STEP 1. Verify transmission fluid level. Refer to WP 0096, Transmission Fluid Service.

a. If fault exists and fluid level is within range, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

CHECK TRANS LIGHT ILLUMINATED AND TRANSMISSION GEAR SELECTOR DISPLAY IS FLASHING CURRENT DRIVE RANGE SELECTION

SYMPTOM

CHECK TRANS light illuminated and transmission gear selector display is flashing current drive range selection.

MALFUNCTION

TRANSMISSION OPERATING IN LIMP MODE.

CORRECTIVE ACTION

WARNING

When operating the vehicle in the transmission LIMP mode, the operator must stay in vehicle. Limp mode locks transmission is whatever gear it was operating in. Operator cannot use parking brake to leave vehicle. Use only the service brakes to control vehicle speed. Failure to comply may result in injury or death to personnel.

CAUTION

Do not shift into NEUTRAL (N). Vehicle may be rendered inoperable.

Do not shut down engine. Shutting down engine may result in the inability to select a drive range at start-up.

STEP 1. Move vehicle to safe location. Refer to WP 0068, Emergency Operation - Transmission (Limp Mode).

END OF WORK PACKAGE

CREW MAINTENANCE

FUEL FIRED HEATER TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References
WP 0019

Parking brake set (WP 0013)
Wheels chocked (WP 0013)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)

TROUBLESHOOTING PROCEDURE

FUEL FIRED HEATER DOES NOT OPERATE

SYMPTOM

Fuel fired heater does not operate.

MALFUNCTION

FAULTS F15 OR F50 ARE DISPLAYED ON CONTROL PANEL.

CORRECTIVE ACTION

NOTE

The heater control panel may become locked for one of two conditions. If the heater overheats three times in succession, fault message F15 is displayed and the control panel is locked. If the heater performs too many start attempts in succession, fault message F50 is displayed and the control panel is locked.

STEP 1. Unlock control panel to erase fault message F15 or F50.

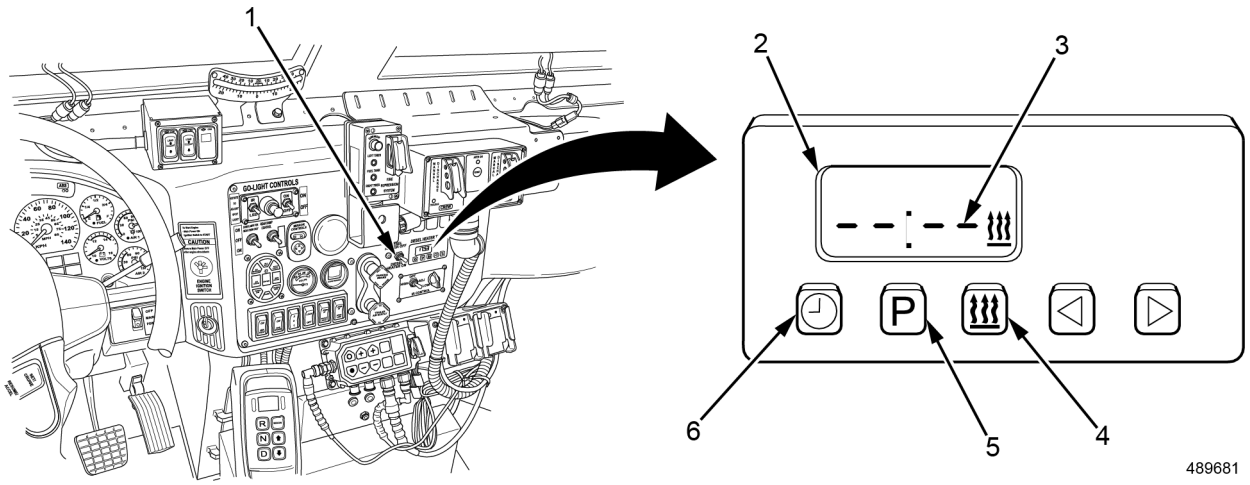


Figure 1. Heater Control - Unlocking.

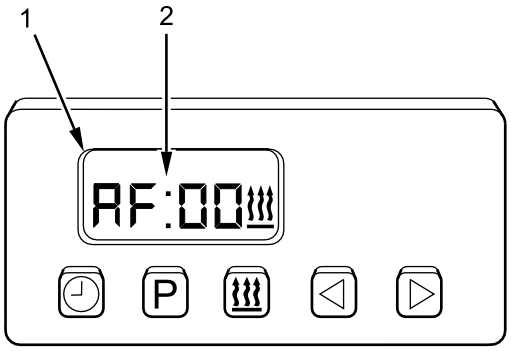
a. To unlock the control panel and erase fault memory, turn DIESEL HEATER switch (Figure 1, Item 1) ON.
b. Press three arrow button (Figure 1, Item 4). Display screen (Figure 1, Item 2) will show current fault code (F15 or F50).
c. While pressing and holding clock button (Figure 1, Item 6), press P button (Figure 1, Item 5). Timer will now display retrieval mode (Figure 2, Item 1).
d. Turn DIESEL HEATER switch (Figure 1, Item 1) OFF. Display screen (Figure 1, Item 2) will change to dash marks (Figure 1, Item 3).
e. Turn DIESEL HEATER switch (Figure 1, Item 1) ON.

f. Press three arrow button (Figure 1, Item 4) to turn fuel fired heater OFF.

g. Press three arrow button (Figure 1, Item 4) to turn fuel fired heater ON.

h. While pressing and holding clock button (Figure 1, Item 6), press P button (Figure 1, Item 5). Timer will again display retrieval mode (Figure 2, Item 1).

STEP 2. Read display screen (Figure 1, Item 2).



213273

Figure 2. Heater Control - Unlocking.

a. If faults are cleared, display screen (Figure 2, Item 1) will show Active Fault (AF) AF:00 (Figure 2, Item 2). After 3 seconds, the control panel is unlocked.

STEP 3. Re-attempt to start fuel fired heater. Refer to WP 0019, Operation Under Usual Conditions - Fuel Fired Heater Operation.

a. If fuel fired heater does not start, notify Field Level Maintenance.

b. If display screen (Figure 2, Item 1) shows AF:15 or AF:50, faults are not cleared. Notify Field Level Maintenance.

END OF WORK PACKAGE

CREW MAINTENANCE

STEERING AND SUSPENSION TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References
WP 0004
WP 0017
WP 0035
WP 0084
WP 0088
WP 0097
WP 0100
WP 0106

TROUBLESHOOTING PROCEDURE

WHEEL WOBBLES OR STEERING SHIMMIES

SYMPTOM

Wheel wobbles or steering shimmies.

MALFUNCTION

WHEEL IS DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect outer and inner side of wheel for dents, bends, or other damage.

a. If wheel is damaged, notify Field Level Maintenance.

MALFUNCTION

TIRE IS LOW OR FLAT.

CORRECTIVE ACTION

STEP 1. Verify CHECK TIRE signal on Central Tire Inflation System (CTIS) Driver Display Module (DDM) (FR, RR, TLR) is flashing or solid illumination. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If indicator is flashing or solid illumination, refer to WP 0084, Air Pressure System Troubleshooting Procedures.

STEP 2. Visually check that tire is low, flat, or visibly damaged (missing, broken, or damaged valve caps or valve stems). Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If tire is damaged, notify Field Level Maintenance.

b. If tire is low or flat, inflate tire to appropriate air pressure. Refer to WP 0097, Tire Inflation Procedure.

(1) If tire does not maintain proper air pressure, notify Field Level Maintenance upon completion of mission.

MALFUNCTION

WHEEL BOLTS, NUTS, OR STUDS ARE LOOSE, MISSING, OR BROKEN.

CORRECTIVE ACTION

STEP 1. Check nuts and studs for looseness, damage, or missing parts. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If nuts or studs are missing, loose, or damaged, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

VEHICLE WANDERS OR PULLS TO ONE SIDE

SYMPTOM

Vehicle wanders or pulls to one side.

MALFUNCTION

TIRE AIR PRESSURE IS NOT CORRECT.

CORRECTIVE ACTION

STEP 1. Verify CHECK TIRE signal on CTIS DDM (FR, RR, or TLR) is flashing or solid illumination. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If indicator is flashing or solid illumination, refer to WP 0084, Air Pressure System Troubleshooting Procedures.

STEP 2. Visually check that tire is low, flat, or visibly damaged (missing, broken, or damaged valve caps or valve stems). Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If tire is damaged, notify Field Level Maintenance.

b. If tire is low or flat, inflate tire to appropriate air pressure. Refer to WP 0097, Tire Inflation Procedure.

(1) If tire does not maintain proper air pressure, notify Field Level Maintenance upon completion of mission.

MALFUNCTION

DRAG LINK IS BENT OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect drag link for damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If drag link is bent or damaged, notify Field Level Maintenance.

MALFUNCTION

STEERING GEARS ARE BENT OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect steering gears for damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If steering gears are damaged, notify Field Level Maintenance.

MALFUNCTION

PITMAN ARMS ARE BENT OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect pitman arms for looseness, bends, or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If pitman arms are damaged, notify Field Level Maintenance.

MALFUNCTION

TIE RODS ARE BENT OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect tie rods for looseness, bends, cracks, or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If tie rods are damaged, notify Field Level Maintenance.

MALFUNCTION

STEERING KNUCKLES ARE BENT OR CRACKED.

CORRECTIVE ACTION

STEP 1. Inspect steering knuckles for looseness, bends, cracks, or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If steering knuckles are damaged, notify Field Level Maintenance.

MALFUNCTION

FRONT UPPER OR LOWER CONTROL ARMS ARE BENT OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect front upper and lower control arms for looseness, bends, cracks, or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If front upper and lower control arms are damaged, notify Field Level Maintenance.

MALFUNCTION

REAR UPPER OR LOWER CONTROL ARMS ARE BENT OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect rear upper and lower control arms for looseness, bends, cracks, or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If rear upper and lower control arms are damaged, notify Field Level Maintenance.

MALFUNCTION

FRONT OR REAR WHEELS ARE OUT OF ALIGNMENT.

CORRECTIVE ACTION

NOTE

A front or rear end wheel alignment problem is hard to detect without special equipment; although in some instances a visual inspection can detect severe misalignment.

To perform a visual inspection the person inspecting the vehicle should be at least 15 feet in front or behind vehicle to obtain a good visual perspective.

STEP 1. Position vehicle on a level surface with front wheels facing straight ahead.

STEP 2. Visually inspect if front or rear tires are pointing inward or outward at front or rear of tires,

a. If a visual misalignment is present, notify Field Level Maintenance.

STEP 3. Visually inspect if front or rear tires are pointing inward or outward at the top or bottom of tires.

a. If a visual misalignment is present, notify Field Level Maintenance.

STEP 4. With the vehicle positioned on a level surface, with the front wheel facing straight ahead, visually inspect alignment of steering wheel while seated in the driver seat.

a. If visual misalignment is present, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

VEHICLE IS HARD TO STEER, OR STEERING IS SLOW TO RESPOND OR HAS INTERMITTENT ASSIST

SYMPTOM

Vehicle is hard to steer, or steering is slow to respond or has intermittent assist.

MALFUNCTION

POWER STEERING RESERVOIR FLUID IS LOW OR EMPTY.

CORRECTIVE ACTION

WARNING

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with standard operating procedures. Handle, store, and dispose of drained fluids in accordance with standard operating procedures. Failure to comply may result in injury to personnel and environmental damage.

STEP 1. Check fluid level in power steering reservoir. Refer to WP 0100, Power Steering Fluid Service.

MALFUNCTION

POWER STEERING SYSTEM LINES, HOSES, OR CONNECTIONS ARE LEAKING, LOOSE, OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect power steering lines, hoses and connections for leaks, looseness, or damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If power steering lines, hoses and connections are leaking, loose, or damaged, notify Field Level Maintenance.

MALFUNCTION

CTIS IS NOT AT PROPER TERRAIN OR LOAD SETTING.

CORRECTIVE ACTION

STEP 1. Check CTIS as required for terrain and load. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.

a. If CTIS is not at proper terrain or load setting, adjust CTIS as necessary. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.

MALFUNCTION

TIRE AIR PRESSURE IS NOT CORRECT.

CORRECTIVE ACTION

STEP 1. Verify CHECK TIRE signal on CTIS DDM (FR, RR, or TLR) is flashing or solid illumination. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If indictor is flashing or solid illumination, refer to WP 0084, Air Pressure System Troubleshooting Procedures.

STEP 2. Visually check that tire is low, flat, or visibly damaged (missing, broken, or damaged valve caps or valve stems). Refer to WP 0088, Preventive Maintenance Checks and Services.

a. If tire is damaged, notify Field Level Maintenance.

b. If tire is low or flat, inflate tire to appropriate air pressure. Refer to WP 0097, Tire Inflation Procedure.

(1) If tire does not maintain proper air pressure, notify Field Level Maintenance upon completion of mission.

MALFUNCTION

DRAG LINK OR STEERING LINKAGE IS STIFF, DUE TO POOR LUBRICATION.

CORRECTIVE ACTION

WARNING

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with Standard Operating Procedures (SOP). Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

STEP 1. Lubricate drag link, and steering linkage fittings. Refer to WP 0106, Lubrication Instructions.

TROUBLESHOOTING PROCEDURE

SUSPENSION MAKES NOISE GOING OVER BUMPS AND WHILE DRIVING

SYMPTOM

Suspension makes noise going over bumps and while driving.

MALFUNCTION

ONE OR MORE SHOCKS OR COIL SPRINGS ARE DAMAGED OR CRACKED.

CORRECTIVE ACTION

STEP 1. Inspect shocks for cracks or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If cracks or other damage are found, notify Field Level Maintenance.

STEP 2. Inspect coil springs for cracks or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If cracks or other damage are found, notify Field Level Maintenance.

MALFUNCTION

EXHAUST SYSTEM IS LOOSE OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect exhaust system for loose or damaged components. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If loose or damaged components are found, notify Field Level Maintenance.

SYMPTOM

Suspension makes loud noise going over bumps.

MALFUNCTION

BUMP STOPS ARE LOOSE, MISSING OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect bump stops for looseness, bends, breaks, or other damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If bump stops are loose, damaged, or missing, notify Field Level Maintenance.

MALFUNCTION

FRONT SWAY BAR LOOSE OR BROKEN.

CORRECTIVE ACTION

STEP 1. Inspect front sway bar for loose or damaged parts. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If front sway bar is loose or damaged, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

VEHICLE IS NOT STABLE, OR HARD TO STEER WHILE TURNING

SYMPTOM

Vehicle is not stable, or hard to steer while turning.

MALFUNCTION

FRONT SWAY BAR LOOSE OR BROKEN.

CORRECTIVE ACTION

STEP 1. Inspect front sway bar for loose or damaged parts. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If front sway bar is loose or damaged, notify Field Level Maintenance.

MALFUNCTION

VEHICLE IS IN FOUR WHEEL DRIVE ON IMPROVED SURFACE.

CORRECTIVE ACTION

STEP 1. Check that FRONT AXLE switch is OFF when driving on improved surfaces. Refer to WP 0017, Operation Under Usual Conditions - Four Wheel Drive Operation.

a. If FRONT AXLE switch is ON, turn FRONT AXLE switch OFF. Refer to WP 0017, Operation Under Usual Conditions - Four Wheel Drive Operation.

END OF WORK PACKAGE

CREW MAINTENANCE

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) AND FIRE SUPPRESSION SYSTEM (FSS) TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References
WP 0004
WP 0065
WP 0088
WP 0102

TROUBLESHOOTING PROCEDURE

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) DOES NOT OPERATE

SYMPTOM

AFES ON Light Emitting Diode (LED) is not illuminated or begins blinking.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

NOTE

The AFES ON LED will be illuminated when the MAIN POWER switch is ON, or has been OFF for less than 30 minutes.

If the AFES ON LED is not illuminated prior to turning the MAIN POWER switch ON, the AFES TROUBLE LEDs and ENGINE FIRE indicator will self-test when MAIN POWER is switched ON. During self-test the TROUBLE LEDs and ENGINE FIRE indicator will temporarily illuminate. After self-test, the AFES ON LED will remain ON.

STEP 1. VERIFY MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
   (1) If AFES ON LED fails to illuminate, notify Field Level Maintenance.
   (2) If AFES ON LED begins a steady blinking, notify Field Level Maintenance.
   (3) If AFES ON LED blinks 9 seconds ON, and 1 second OFF, notify Field Level Maintenance.

SYMPTOM

AFES CREW TROUBLE LED is illuminated solid.

MALFUNCTION

AFES FIRE EXTINGUISHER IS BELOW MINIMUM PRESSURE OR ELECTRICAL CONNECTOR IS NOT PROPERLY CONNECTED.

CORRECTIVE ACTION

NOTE

The AFES ON LED will be illuminated when the MAIN POWER switch is ON, or has been OFF for less than 30 minutes.

If the AFES ON LED is not illuminated prior to turning the MAIN POWER switch ON, the AFES TROUBLE LEDs and ENGINE FIRE indicator will self-test when MAIN POWER is switched ON. During self-test the TROUBLE LEDs and ENGINE FIRE indicator will temporarily illuminate. After self-test, the AFES ON LED will remain ON.

STEP 1. Verify crew extinguisher gauges are in the correct range for ambient temperature and pressure according to the gauge and label on the bottle. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If extinguisher pressure gauge is NOT in correct range, notify Field Level Maintenance.

STEP 2. Verify crew extinguisher electrical connectors are properly connected.

a. If an extinguisher electrical connector is NOT properly connected, perform the following steps:
   (1) Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
   (2) Disconnect electrical connector from AFES Battery Backup Unit (BBU) and attach warning tag to AFES control panel. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.
   (3) Reconnect extinguisher electrical connector(s).
   (4) Reconnect electrical connector to AFES BBU and remove warning tag from AFES control panel. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.
   (5) Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
      (a) If CREW TROUBLE LED is ON solid and crew extinguisher electrical connections are properly connected, notify Field Level Maintenance.

MALFUNCTION

AFES CABIN INFRARED (IR) SENSOR IS NOT PROPERLY CONNECTED.

CORRECTIVE ACTION

STEP 1. Verify that all cabin IR sensors are properly connected. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If cabin IR sensor electrical connector is NOT properly connected, perform the following steps:
   (1) Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
   (2) Disconnect electrical connector from AFES Battery Backup Unit (BBU) and attach warning tag to AFES control panel. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.
   (3) Reconnect IR sensor electrical connector.
   (4) Reconnect electrical connector to AFES BBU and remove warning tag from AFES control panel. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.
   (5) Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
      (a) If CREW TROUBLE LED blinks slowly and cabin IR sensor electrical connections are properly connected, notify Field Level Maintenance.

SYMPTOM

AFES ENGINE TROUBLE LED is illuminated solid.

MALFUNCTION

AFES ENGINE FIRE EXTINGUISHER IS BELOW MINIMUM PRESSURE.

CORRECTIVE ACTION

STEP 1. Verify engine extinguisher gauge is in the correct range for ambient temperature and pressure according to the gauge and label on the bottle. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If extinguisher pressure gauge is NOT in correct range, notify Field Level Maintenance.

STEP 2. Verify engine extinguisher electrical connector is properly connected.

a. If extinguisher electrical connector is NOT properly connected, perform the following steps:

(1) Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(2) Disconnect electrical connector from AFES BBU and attach warning tag to AFES control panel. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.

(3) Reconnect extinguisher electrical connector.

(4) Reconnect electrical connector to AFES BBU and remove warning tag from AFES control panel. Refer to WP 0102 , Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.

(5) Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(a) If ENGINE TROUBLE LED is ON solid and engine extinguisher electrical connections are properly connected, notify Field Level Maintenance.

MALFUNCTION

AFES ENGINE INFRARED (IR) SENSOR IS NOT PROPERLY CONNECTED.

CORRECTIVE ACTION

STEP 1. Verify that all engine sensors are properly connected. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If engine IR sensor electrical connector is NOT properly connected, perform the following steps:

(1) Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(2) Disconnect electrical connector from AFES BBU and attach warning tag to AFES control panel. Refer to WP 0102 , Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.

(3) Reconnect IR sensor electrical connector.

(4) Reconnect electrical connector to AFES BBU and remove warning tag from AFES control panel. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.

(5) Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(a) If ENGINE TROUBLE LED blinks slowly and engine IR sensor electrical connections are properly connected, notify Field Level Maintenance.

MALFUNCTION

AFES ENGINE FIRE SENSOR ZONE IS IN ALARM.

CORRECTIVE ACTION

STEP 1. Engine sensor zone is in alarm. Notify Field Level Maintenance.

SYMPTOM

AFES BBU LED is RED or OFF.

MALFUNCTION

AFES BBU IS NOT CONNECTED PROPERLY OR IS FAULTY.

CORRECTIVE ACTION

WARNING

Ensure BBU is fully charged. Operating the vehicle without BBU fully charged may result in the AFES not operating in the event of a power failure. Failure to comply may result in serious injury to personnel.

NOTE

AFES BBU GREEN LED indicates the battery is charged sufficiently and vehicle battery voltage to the BBU is greater than 18 volts .

AFES BBU RED LED indicates vehicle battery voltage to the BBU is less than 18 volts and AFES BBU battery voltage is greater than 21 volts.

AFES BBU is located behind the driver seat and has a 3 year life. Operating vehicle with an expired battery is not recommended.

STEP 1. Verify that BBU is present, and connected properly. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.

SYMPTOM

AFES did not automatically activate with passenger or ENGINE fire present.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(1) If system still does not automatically activate, attempt manual activation. Refer to WP 0065, Emergency Operations - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).

(2) If system will not manually activate, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

FIRE SUPPRESSION SYSTEM (FSS) DOES NOT OPERATE

SYMPTOM

One or more FSS Indicator LEDs are not illuminated.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Verify extinguisher pressure gauge needle is in GREEN zone. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If one or more FSS indicator LED fails to illuminate, notify Field Level Maintenance.

b. If any extinguisher pressure gauge displays incorrect pressure, notify Field Level Maintenance.

STEP 3. Verify FSS extinguisher electrical connectors are properly connected.

a. If extinguisher electrical connector is not properly connected, perform the following steps:

(1) Turn MAIN POWER switch OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(2) Reconnect extinguisher electrical connector.

(3) Turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(4) Verify all FSS Indicator LEDs are illuminated.

(a) If one or more FSS Indicators fail to illuminate, notify Field Level Maintenance.

SYMPTOM

FSS did not manually activate when switch was moved to the ON position.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Re-attempt manual activation of FSS. Refer to WP 0065, Emergency Operations - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).

a. If system still will not manually activate, notify Field Level Maintenance.

END OF WORK PACKAGE

CREW MAINTENANCE

WINCH TROUBLESHOOTING PROCEDURES

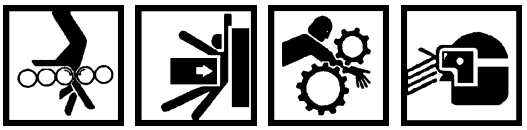
INITIAL SETUP:

Materials/Parts	References
Gloves, leather (WP 0110, Item 10)	WP 0054
Goggles, industrial (WP 0110, Item 13)	WP 0088

TROUBLESHOOTING PROCEDURE

WINCH CABLE WILL NOT MOVE USING REMOTE CONTROL

WARNING



WINCH OPERATIONS

All personnel involved in winch operations must wear safety goggles and heavy leather-palmed gloves. A broken wire could cut through gloves and injure hand. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Do not use parts other than those specified for the system being serviced. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Vehicle curb weight exceeds winch capacity. Do not use winch for vehicle self-recovery operations. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Do not exceed rated pulling capacity of winch. Winch is rated to pull maximum load of 18,000 lb (8165 kg) when pulling first layer of winch cable onto winch drum. Failure to comply may result in serious injury or death to personnel and damage to equipment.

During winching operations, all personnel must remain either inside the vehicle or outside a circled area with a radius that is twice the length of the extended winch rope when measured from both the winch and the load point. Failure to comply may result in serious injury or death to personnel.

When operating winch, do not wear loose clothing; it can get caught in winch cable as winch cable winds around spool drum. Keep a minimum of five wraps of winch cable on drum when using winch. Fewer wraps may cause winch cable to pull free of drum and release load. Failure to comply may result in serious injury or death to personnel and damage to equipment.

When operating winch, ensure there are no objects in path of winch cable or vehicle. To prevent accidental release, make sure pull-cable fitting is attached before removing mechanical lever lockpin. Failure to comply may result in serious injury or death to personnel.

Discontinue use of winch if Overload Interrupt (OLI) device is tripped. The OLI guards against overloading the motor, geartrain, and wire rope. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

SYMPTOM

Winch cable will not move using remote control.

MALFUNCTION

WINCH REMOTE CONTROL NOT FUNCTIONING PROPERLY.

CORRECTIVE ACTION

STEP 1. Verify remote control is properly connected. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

a. If winch cable still does not move using remote control, notify Field Level Maintenance.

MALFUNCTION

REMOTE CONTROL OR WINCH ELECTRICAL CONNECTOR(S) IS DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect electrical connector(s) for damage. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

a. If damaged, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

WINCH UNUSUALLY NOISY WHEN OPERATING

SYMPTOM

Winch unusually noisy when operating.

MALFUNCTION

CABLE HAS TWISTS OR TANGLES THAT WOULD CAUSE IT TO BIND.

CORRECTIVE ACTION

STEP 1. Spool out cable or take up cable as necessary to straighten cable. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

STEP 2. Inspect winch cable for frays, kinks, or cuts. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If cable is frayed, kinked, or cut at any point, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

WINCH MOTOR FUNCTIONS, BUT CABLE DOES NOT MOVE

SYMPTOM

Winch motor functions, but cable does not move.

MALFUNCTION

CLUTCH LEVER IS IN FREE SPOOLING MODE.

CORRECTIVE ACTION

STEP 1. Verify position and engage clutch lever. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

a. If clutch lever will not engage, notify Field Level Maintenance.

MALFUNCTION

WINCH CABLE IS BROKEN.

CORRECTIVE ACTION

STEP 1. Inspect winch cable for frays, kinks, or cuts. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If cable is frayed, kinked, or cut at any point, notify Field Level Maintenance.
b. If winch cable still does not move, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

UNABLE TO PULL CABLE OUT BY HAND

SYMPTOM

Unable to pull cable out by hand.

MALFUNCTION

CLUTCH LEVER ENGAGED.

CORRECTIVE ACTION

STEP 1. Verify position of clutch lever and disengage for free spooling. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

a. If clutch lever will not disengage, notify Field Level Maintenance.
b. If winch cable still does not pull freely, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

WINCH STOPS DURING OPERATION

SYMPTOM

Winch stops during operation.

MALFUNCTION

WINCH REMOTE CONTROL HAS LOOSE/IMPROPER CONNECTION.

CORRECTIVE ACTION

STEP 1. Verify secure connection between winch remote control plug and winch remote control connector. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

a. If winch remote control plug does not maintain secure connection with winch remote control connector, notify Field Level Maintenance.

MALFUNCTION

OVERLOAD INTERRUPT (OLI) DEVICE IS TRIPPED.

CORRECTIVE ACTION

STEP 1. Disconnect winch remote control plug from winch remote control connector. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

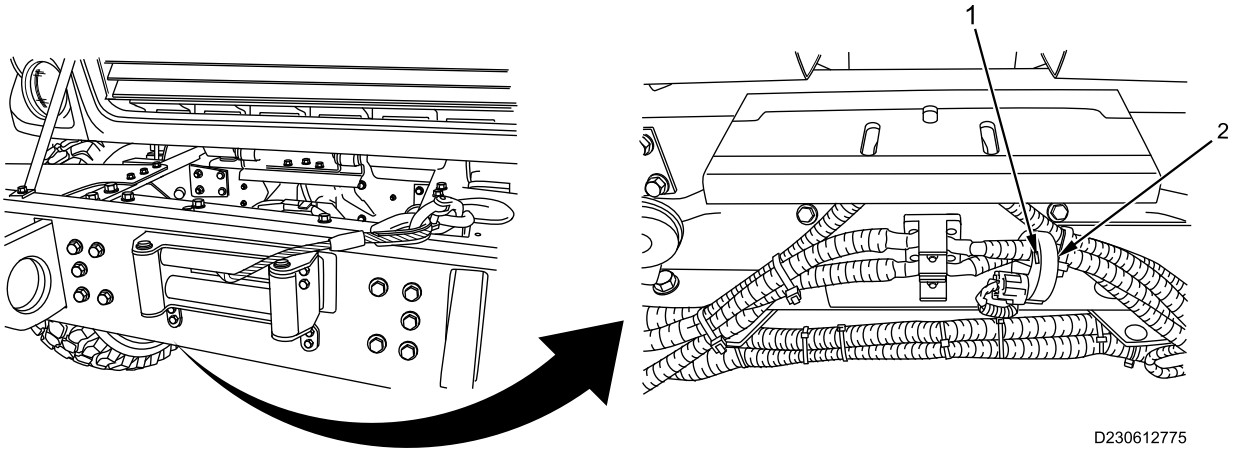


Figure 1. OLI Device.

NOTE

The OLI device guards against overloading the winch motor, gear train, and wire rope. When the load exceeds maximum capacity, the OLI device trips and temporarily disables winching operations to prevent damage to equipment.

OLI device is a thick, black disc located around RED power cable beside winch motor.

If OLI device is tripped, free-spooling mode is disabled.

OLI device automatically resets after a sufficient cool-down period. Time required for cool-down may vary according to ambient temperatures.

STEP 2. Check RED LED indicator (Figure 1, Item 1) on side of OLI device (Figure 1, Item 2).

a. If RED LED indicator (Figure 1, Item 1) on OLI device (Figure 1, Item 2) is Flashing, do not attempt to operate winch until LED indicator turns OFF.

STEP 3. Connect winch remote control plug to winch remote control connector and attempt to operate winch. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.

a. If winch still fails to operate, notify Field Level Maintenance.

END OF WORK PACKAGE

CREW MAINTENANCE

AIR PRESSURE SYSTEM TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References
WP 0004
WP 0011
WP 0013
WP 0035
WP 0088
WP 0095
WP 0097
WP 0103

TROUBLESHOOTING PROCEDURE

WITH ENGINE RUNNING, AIR PRESSURE GAUGES SHOW 70 PSI (483 KPA) OR LESS, AND AIR PRESSURE GAUGE RED INDICATOR LIGHTS ARE ON

NOTE

Normal air system operating pressure is between 110 and 130 psi (758 to 896 kPa).

System pressure will rise and fall depending on operating conditions, but should not drop below 70 psi (483 kPa).

The RED indicator light on either AIR pressure gauge will illuminate when air pressure is less than 70 psi (483 kPa). The under-limit audible alarm will sound if the service drive lights are illuminated.

SYMPTOM

With engine running, AIR pressure gauges show 70 psi (483 kPa) or less, and AIR pressure gauge RED indicator lights are ON.

MALFUNCTION

TRAILER AIR SUPPLY CONTROL IS NOT PULLED OUT.

CORRECTIVE ACTION

STEP 1. Verify TRAILER AIR SUPPLY control is OUT.

a. If not, pull TRAILER AIR SUPPLY control OUT. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Check for proper air pressure. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

MALFUNCTION

AIR SYSTEM CONNECTIONS, GLADHANDS, OR LINES ARE LOOSE, LEAKING, OR DAMAGED.

CORRECTIVE ACTION

STEP 1. Verify air system connections, gladhands, and/or air lines are connected properly. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If gladhands are loose, tighten gladhand connections.

STEP 2. Check for audible air leaks.

a. Start vehicle, and allow air system to reach normal operating pressure. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

b. Shut down vehicle engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

c. Listen for hissing of escaping air in, around, or under vehicle.

(1) If air leaks are heard in, around, or under vehicle, notify Field Level Maintenance.

STEP 3. Check for proper air pressure. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If air pressure will not build above 110 psi (758 kPa), notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

TRAILER BRAKES DO NOT APPLY WHEN SERVICE BRAKE PEDAL OR PARKING BRAKE IS APPLIED

SYMPTOM

Trailer brakes do not apply when service brake pedal or parking brake is applied.

MALFUNCTION

TRAILER AIR SUPPLY CONTROL IS NOT PUSHED IN.

CORRECTIVE ACTION

STEP 1. Verify TRAILER AIR SUPPLY control is IN.

a. If not, firmly push TRAILER AIR SUPPLY control IN. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
b. If TRAILER AIR SUPPLY control will not stay IN, notify Field Level Maintenance.

MALFUNCTION

SERVICE AND EMERGENCY AIR LINES ARE NOT PROPERLY CONNECTED AND SECURED.

CORRECTIVE ACTION

STEP 1. Inspect service and emergency air lines for proper connection. Refer to WP 0103, Vehicle Towing.

a. If not, properly connect and secure the service and emergency air lines. Refer to WP 0103, Vehicle Towing.
b. If connected properly and brake still does not function, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

CENTRAL TIRE INFLATION SYSTEM (CTIS) DOES NOT OPERATE

SYMPTOM

CTIS does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF, OR IGNITION SWITCH IS OFF.

CORRECTIVE ACTION

NOTE

To illuminate CTIS display, Master Vehicle Light Switch (MVLS) and SER. DRIVE lights must be ON.

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

STEP 2. Re-attempt to operate CTIS. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operaiton.

STEP 3. Verify IGNITION SWITCH is set to RUN. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn IGNITION SWITCH to RUN. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 4. Re-attempt to operate CTIS. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operaiton.

STEP 5. Verify MVLS is ON and CTIS display is illuminated. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If not, turn MLVS ON to illuminate CTIS display. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

MALFUNCTION

CIRCUIT BREAKER IS TRIPPED.

CORRECTIVE ACTION

NOTE

Operators are limited to circuit breaker reset only. If circuit breaker reset does not restore circuit operation, a fuse may be at fault.

STEP 1. Inspect circuit breaker F28 and F45 on circuit breaker panel.

a. If circuit breaker is tripped, reset circuit breaker. Refer to WP 0095, Circuit Breaker Reset.

b. If system still does not operate or circuit breaker trips again, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

CTIS DRIVER'S DISPLAY MODULE (DDM) OVERSPEED WARNING INDICATOR IS LIT

SYMPTOM

CTIS DDM OVERSPEED warning indicator is lit.

MALFUNCTION

VEHICLE SPEED IS TOO FAST FOR PRESSURE SELECTED.

CORRECTIVE ACTION

WARNING

Ensure tire pressures are maintained at the proper pressures for normal operations. Although observation of excessive inflation periods through the CTIS DDM can help identify a problem, damaged tires should be replaced prior to placing the vehicle in operation. Low air pressures can result in tire failures, which could lead to an accident causing personnel injury and/or damage to equipment.

NOTE

Terrain selection is changed by toggling TERRAIN switch up to increase tire pressures and down to decrease tire pressures. Terrain selection will display on CTIS DDM. Any switch operation that does not change tire pressures will command CTIS to do a pressure check.

STEP 1. Slow vehicle to safe speed.

STEP 2. Verify correct TERRAIN is selected for driving conditions. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.

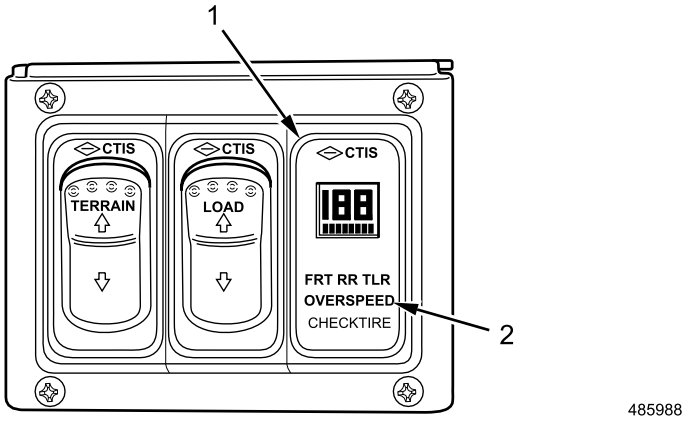


Figure 1. OVERSPEED Warning Indicator.

a. For travel on paved surfaces at higher speeds, toggle TERRAIN switch until HY appears on DDM.
b. For reduced-speed operation on secondary roads, toggle TERRAIN switch until CC appears on DDM.
c. For reduced-speed operation on unpaved surfaces, toggle TERRAIN switch until SS appears on DDM.

CAUTION

The E selection is for extreme conditions only and should not be used for normal driving. Failure to comply may result in damage to equipment.

d. For selection of extremely low tire pressure to help free stuck vehicle, toggle TERRAIN switch until E appears on DDM.
e. If proper TERRAIN has been selected and CTIS DDM display (Figure 1, Item 1) still indicates OVERSPEED warning indicator (Figure 1, Item 2), notify Field Level Maintenance.

STEP 3. Check for low, flat, or visibly damaged tires. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If low or flat tire is found, fill tire. Refer to WP 0097, Tire Inflation Procedure.
b. If visible damage is found notify Field Level Maintenance.
c. If no tire damage is found and CTIS DDM display (Figure 1, Item 1) still indicates OVERSPEED warning indicator (Figure 1, Item 2), notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

CTIS DDM IS ALTERNATING BETWEEN TERRAIN AND RUN FLAT (RF)

SYMPTOM

CTIS DDM is alternating between TERRAIN and RF.

MALFUNCTION

CTIS HAS AIR LEAK.

CORRECTIVE ACTION

STEP 1. Verify CHECK TIRE signal on CTIS DDM (FR, RR, or TLR) is flashing or stays illuminated.

a. If CHECK TIRE signal is flashing or stays illuminated notify Field Level Maintenance.

STEP 2. Visually check for low, flat, or visibly damaged tires. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If low or flat tire is found, fill tire. Refer to WP 0097, Tire Inflation Procedure.

b. If no visibly damaged, low, or flat tire is found, notify Field Level Maintenance.

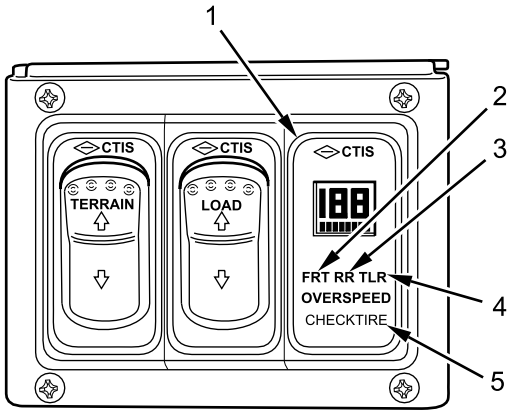
WARNING

If CHECK TIRE warning indicator is displayed, stop vehicle in a safe place and identify extent of tire damage. Failure to comply may result in serious injury or death to personnel and damage to equipment.

NOTE

The CHECK TIRE warning indicator indicates one or more tires may be at significantly lower pressure than others and could indicate that tire is not holding pressure. Flashing FRT or RR indicator will indicate the fault location.

STEP 3. Inspect CTIS load switch to verify system is maintaining air pressure. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).



X101300219

Figure 2. CTIS DDM Check Tire Signals.

a. If FRT warning indicator (Figure 2, Item 2) is displayed, listen for air leaks at CTIS connections at front of vehicle.
   (1) If leak is found, notify Field Level Maintenance.

b. If RR warning indicator (Figure 2, Item 3) is displayed, listen for air leaks at CTIS connections at rear of vehicle.
   (1) If leak is found, notify Field Level Maintenance.

c. If TLR warning indicator (Figure 2, Item 4) is displayed, listen for air leaks at CTIS connections on trailer.
   (1) If leak is found, notify Field Level Maintenance.

d. If CTIS is connected properly with no air leaks present and the CHECK TIRE warning indicator light (Figure 2, Item 5) is still blinking on the CTIS DDM (Figure 2, Item 1), notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

CTIS FRONT (FRT), REAR (RR), OR TRAILER (TLR) CHECK TIRE WARNING INDICATOR ON DDM IS CONSTANTLY BLINKING AND HISSING SOUND IS HEARD

SYMPTOM

CTIS Front (FRT), Rear (RR), or Trailer (TLR) CHECK TIRE warning indicator on DDM is constantly blinking and hissing sound is heard.

MALFUNCTION

CTIS HAS AIR LEAK.

CORRECTIVE ACTION

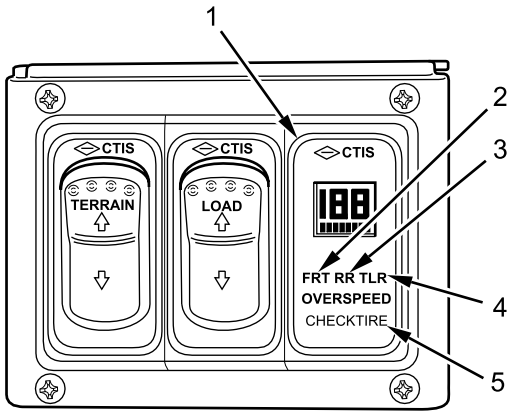
WARNING

If CHECK TIRE warning indicator is displayed, stop vehicle in a safe place and identify extent of tire damage. Failure to comply may result in serious injury or death to personnel and damage to equipment.

NOTE

The CHECK TIRE warning indicator indicates one or more tires may be at significantly lower pressure than others and could indicate that tire is not holding pressure. Flashing FRT or RR indicator will indicate the fault location.

STEP 1. Inspect CTIS load switch to verify system is maintaining air pressure. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).



X101300219

Figure 3. CTIS DDM Check Tire Signals.

a. If FRT warning indicator (Figure 3, Item 2) is displayed, listen for air leaks at CTIS connections at front of vehicle.
   (1) If leak is found, notify Field Level Maintenance.
b. If RR warning indicator (Figure 3, Item 3) is displayed, listen for air leaks at CTIS connections at rear of vehicle.
   (1) If leak is found, notify Field Level Maintenance.
c. If TLR warning indicator (Figure 3, Item 4) is displayed, listen for air leaks ar CTIS connections on trailer.
d. If CTIS is connected properly with no air leaks present and the CHECK TIRE warning indicator light (Figure 3, Item 5) is still blinking on the CTIS DDM (Figure 3, Item 1), notify Field Level

Maintenance.

END OF WORK PACKAGE

CREW MAINTENANCE

OBJECTIVE GUNNERS PROTECTION KIT (OGPK) TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References
WP 0004
WP 0011
WP 0013
WP 0027
WP 0048
WP 0088
WP 0089

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)

TROUBLESHOOTING PROCEDURE

OBJECTIVE GUNNERS PROTECTION KIT (OGPK) WILL NOT TRAVERSE IN POWER MODE

SYMPTOM

OGPK will not traverse in POWER mode.

MALFUNCTION

RED IMPROVED TURRET DRIVE SYSTEM (ITDS) CONTROLLER KNOB IS OFF.

CORRECTIVE ACTION

WARNING

ITDS electrical connector must be disconnected prior to turret operations. Traversing turret without disconnecting electrical connector can damage connector and cause electrical shock. Failure to comply may result in serious injury or death to personnel and damage to equipment.

STEP 1. Verify RED ITDS controller knob is ON. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

a. If RED ITDS controller knob does not move, notify Field Level Maintenance.

MALFUNCTION

HOLDING BRAKE CONTROLLER IS IN DISENGAGE.

CORRECTIVE ACTION

STEP 1. Verify holding brake controller is set to ENGAGE. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

a. If holding brake controller does not switch to ENGAGE, notify Field Level Maintenance.

MALFUNCTION

ITDS BATTERIES ARE NOT CHARGED.

CORRECTIVE ACTION

STEP 1. Check ITDS Battery Light Emitting Diode (LED) Indicator. Refer to WP 0004, Description and Use of Operator Controls and Indicators. ITDS batteries are fully charged when all LEDs on ITDS battery LED indicator are illuminated.

a. If ITDS Battery LED Indicator shows batteries are not fully charged, charge ITDS batteries.

(1) In MANUAL mode, traverse OGPK until ITDS electrical connector is aligned with battery charging cable. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners

Protection Kit (OGPK) Operation.

(2) Connect ITDS electrical connector to battery charging cable. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

(3) Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).

(4) Allow vehicle to idle at high RPM until Battery LED Indicator shows ITDS batteries are fully charged. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.

(a) If ITDS batteries still do not charge, notify Field Level Maintenance.

(5) Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

MALFUNCTION

OGPK OBSTRUCTION.

CORRECTIVE ACTION

STEP 1. Inspect OGPK and turret ring for debris. Refer to WP 0089, Vehicle Cleaning.

STEP 2. Disconnect ITDS electrical connector to battery charging cable. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

STEP 3. Re-attempt to traverse OGPK. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

MALFUNCTION

LOOSE OR MISSING ITDS MOUNTING HARDWARE.

CORRECTIVE ACTION

STEP 1. Visually inspect ITDS for loose or missing hardware.

a. If hardware is loose or missing, notify Field Level Maintenance.

MALFUNCTION

LOOSE CONNECTION AT JOYSTICK CONTROLLER.

CORRECTIVE ACTION

STEP 1. Inspect ends of joystick controller electrical cable for loose connections.

a. If a loose connection is detected, perform the following steps:

(1) Verify turret is locked. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

(2) Tighten loose connection(s) of electrical cable(s) until secure.

STEP 2. Verify OGPK traverses in POWER mode. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

a. If OGPK still does not traverse in POWER mode, notify Field Level Maintenance.

MALFUNCTION

LOOSE CONNECTION AT ITDS CONTROLLER.

CORRECTIVE ACTION

STEP 1. Inspect ends of ITDS controller electrical cable for loose connections.

a. If a loose connection is detected, perform the following steps:

(1) Verify turret is locked. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

(2) Tighten loose connection(s) of electrical cable(s) until secure.

STEP 2. Verify OGPK traverses in POWER mode. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

a. If OGPK still does not traverse in POWER mode, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

OGPK WILL NOT TRAVERSE IN MANUAL MODE

SYMPTOM

OGPK will not traverse in MANUAL mode.

MALFUNCTION

HOLDING BRAKE CONTROLLER IS ENGAGED.

CORRECTIVE ACTION

STEP 1. Verify holding brake controller is set to DISENGAGE. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

a. If holding brake controller does not switch to DISENGAGE, notify Field Level Maintenance.

MALFUNCTION

OGPK OBSTRUCTION.

CORRECTIVE ACTION

STEP 1. Inspect OGPK and turret ring for debris.

a. If debris is found, clean OGPK and/or turret ring. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

MALFUNCTION

LOOSE OR MISSING ITDS MOUNTING HARDWARE.

CORRECTIVE ACTION

STEP 1. Visually inspect ITDS for loose or missing mounting hardware.

a. If mounting hardware is loose or missing, or OGPK still fails to traverse in MANUAL mode, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

ITDS BATTERY LED INDICATOR DOES NOT ILLUMINATE

SYMPTOM

ITDS Battery LED Indicator does not illuminate.

MALFUNCTION

ITDS BATTERIES ARE NOT CHARGED.

CORRECTIVE ACTION

STEP 1. Verify RED ITDS controller knob is ON.

a. If RED ITDS controller knob is OFF, turn ON. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

b. If RED ITDS controller knob does not move, notify Field Level Maintenance.

STEP 2. Verify ITDS Battery LED indicator shows batteries fully charged.

a. If ITDS Battery LED Indicator shows batteries are not fully charged, charge ITDS batteries.

(1) In MANUAL mode, traverse OGPK until ITDS electrical connector is aligned with battery charging cable. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunner Protection Kit (OGPK) Operation.

(2) Connect ITDS electrical connector to battery charging cable. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

(3) Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure Above 32°F (0°C).

(4) Allow vehicle to idle at high RPM until ITDS Battery LED Indicator shows ITDS batteries are fully charged. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.

(a) If batteries still do not charge, notify Field Level Maintenance.

(5) Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

TROUBLESHOOTING PROCEDURE

ONLY BOTTOM ITDS BATTERY LED INDICATOR BAR ILLUMINATES AND IS FLASHING

SYMPTOM

Only bottom ITDS Battery LED Indicator bar illuminates and is flashing.

MALFUNCTION

ITDS BATTERIES ARE NOT FULLY CHARGED.

CORRECTIVE ACTION

STEP 1. Verify ITDS Battery LED indicator shows batteries fully charged.

a. If ITDS Battery LED Indicator shows batteries are not fully charged, charge ITDS batteries.

(1) In MANUAL mode, traverse OGPK until ITDS electrical connector is aligned with battery charging cable. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

(2) Connect ITDS electrical connector to battery charging cable. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.

(3) Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure Above 32°F (0°C).

(4) Allow vehicle to idle at high RPM until ITDS Battery LED Indicator shows ITDS batteries are fully charged. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.

(a) If batteries still do not charge, notify Field Level Maintenance.

(5) Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

TROUBLESHOOTING PROCEDURE

ENTIRE ITDS BATTERY LED INDICATOR FLASHES

SYMPTOM

Entire ITDS Battery LED Indicator flashes.

MALFUNCTION

JOYSTICK CONTROLLER OR SYSTEM FAULT.

CORRECTIVE ACTION

STEP 1. Verify entire ITDS Battery LED Indicator is flashing. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

STEP 2. Push RED ITDS controller knob OFF.

STEP 3. Pull RED ITDS controller knob ON.

STEP 4. Verify entire ITDS Battery LED Indicator is still flashing.

a. If entire ITDS Battery LED Indicator is still flashing, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

OGPK WILL NOT STOP TRAVERSING IN POWER MODE AFTER JOYSTICK CONTROLLER IS RELEASED

SYMPTOM

OGPK will not stop traversing in POWER mode after joystick controller is released.

MALFUNCTION

OGPK DOES NOT RESPOND TO JOYSTICK CONTROLLER.

CORRECTIVE ACTION

STEP 1. Move joystick controller to the NEUTRAL (N) position.

a. If OGPK fails to stop traversing when joystick controller is moved to NEUTRAL (N) position, push RED ITDS controller knob OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(1) If OGPK stops traversing, disconnect joystick electrical connector from joystick controller.

(2) Notify Field Level Maintenance.

b. If joystick controller does not move to the NEUTRAL (N) position, push RED ITDS controller knob OFF. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

(1) If OGPK stops traversing, disconnect joystick electrical connector from joystick controller.

(2) Notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

HOLDING BRAKE CONTROLLER WILL NOT SWITCH FROM ONE SETTING TO THE OTHER

SYMPTOM

Holding brake controller will not switch from one setting to the other.

MALFUNCTION

FAULTY ENGAGE/DISENGAGE LEVER.

CORRECTIVE ACTION

STEP 1. Verify holding brake controller switches settings. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

a. If the holding brake controller fails to switch settings, notify Field Level Maintenance.

END OF WORK PACKAGE

CREW MAINTENANCE

AMBULANCE EQUIPMENT TROUBLESHOOTING PROCEDURES

INITIAL SETUP:

References
WP 0004
WP 0020
WP 0021
WP 0039
WP 0088
WP 0089

TROUBLESHOOTING PROCEDURE

LITTER LIFT DOES NOT MOVE ON RAIL

SYMPTOM

Litter lift does not move on rail.

MALFUNCTION

LITTER LIFT RAIL OBSTRUCTION.

CORRECTIVE ACTION

STEP 1. Inspect litter lift rail for debris. Refer to WP 0089, Vehicle Cleaning.

MALFUNCTION

LITTER LIFT RAIL DAMAGED

CORRECTIVE ACTION

STEP 1. Visually inspect litter lift rail for damage

a. If litter lift still does not move or litter lift rail is damaged, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

LITTER LIFT DOES NOT OPERATE

SYMPTOM

Litter lift does not operate.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operation Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operation Controls and Indicators.

STEP 2. Push OUT/IN on litter lift switch. Refer to WP 0039, Operation Under Usual Conditions - Litter Lifting and Securing Operation.

MALFUNCTION

LITTER LIFT POWER CABLE IS DISCONNECTED

CORRECTIVE ACTION

STEP 1. Visually check both electrical connectors on litter lift power cable are properly connected.

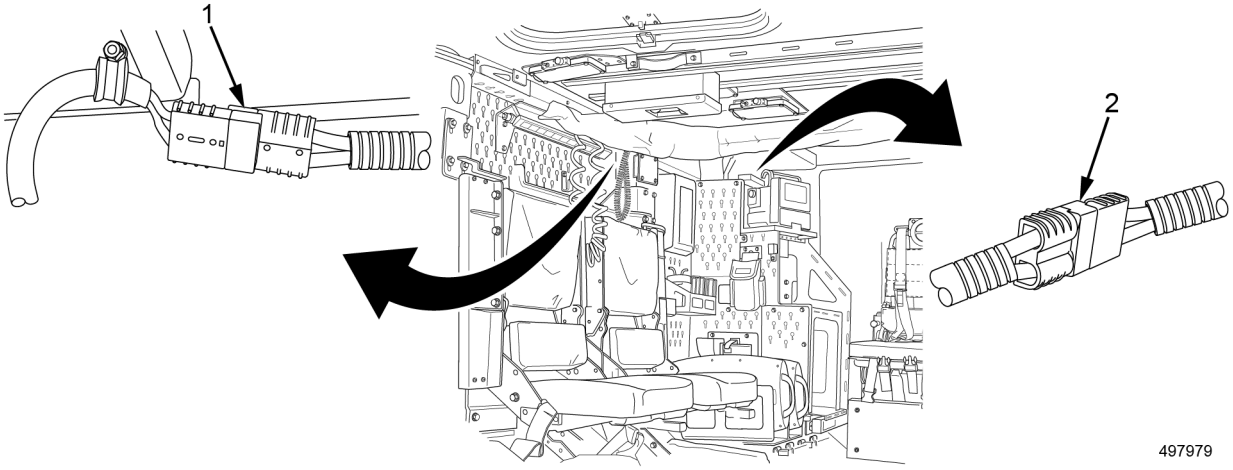


Figure 1. Litter Lift Power Cable Connectors.

a. If one or both litter lift power cable connectors (Figure 1, Item 1 and 2) are disconnected, re-connect power cable connectors (Figure 1, Item 1 and 2).

STEP 2. If litter lift rope still does not move OUT/IN, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

LITTER TROLLEY DOES NOT OPERATE

SYMPTOM

Litter trolley does not operate.

MALFUNCTION

LITTER TROLLEY OBSTRUCTION.

CORRECTIVE ACTION

STEP 1. Inspect litter trolley and rails for debris. Refer to WP 0089, Vehicle Cleaning.

MALFUNCTION

LITTER TROLLEY RAILS ARE DAMAGED.

CORRECTIVE ACTION

STEP 1. Inspect litter trolley and rails for damage. Refer to WP 0088, Preventive Maintenance Checks and Services (PMCS).

a. If damaged components are found, notify Field Level Maintenance.

TROUBLESHOOTING PROCEDURE

NO POWER TO AMBULANCE EQUIPMENT

SYMPTOM

No power to ambulance equipment.

MALFUNCTION

MAIN POWER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify MAIN POWER switch is ON. Refer to WP 0004, Description and Use of Operation Controls and Indicators.

a. If not, turn MAIN POWER switch ON. Refer to WP 0004, Description and Use of Operation Controls and Indicators.

MALFUNCTION

POWER STRIP IS NOT PLUGGED INTO POWER OUTLET OR IS TURNED OFF.

CORRECTIVE ACTION

STEP 1. Verify power strip is plugged into outlet. Refer to WP 0021, Operation Under Usual Conditions -110V Power Strip Operation.

STEP 2. Inspect light on power strip is illuminated. Refer to WP 0021, Operation Under Usual Conditions -110V Power Strip Operation.

a. If light on power strip is not illuminated, reset power strip circuit breaker. Refer to WP 0021, Operation Under Usual Conditions -110V Power Strip Operation.

MALFUNCTION

POWER INVERTER SWITCH AND/OR REMOTE POWER INVERTER SWITCH IS OFF.

CORRECTIVE ACTION

STEP 1. Verify POWER INVERTER switch is ON. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.

a. If not ON, turn POWER INVERTER switch ON. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.

STEP 2. Inspect light on power strip is illuminated. Refer to WP 0021, Operation Under Usual Conditions -110V Power Strip Operations.

STEP 3. Verify remote POWER INVERTER switch is ON. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.

a. If not ON, turn remote POWER INVERTER switch on. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.

STEP 4. Verify Ground Fault Circuit Interruptor (GFCI) on 110V outlet (Figure 2, Item 1) is not tripped.

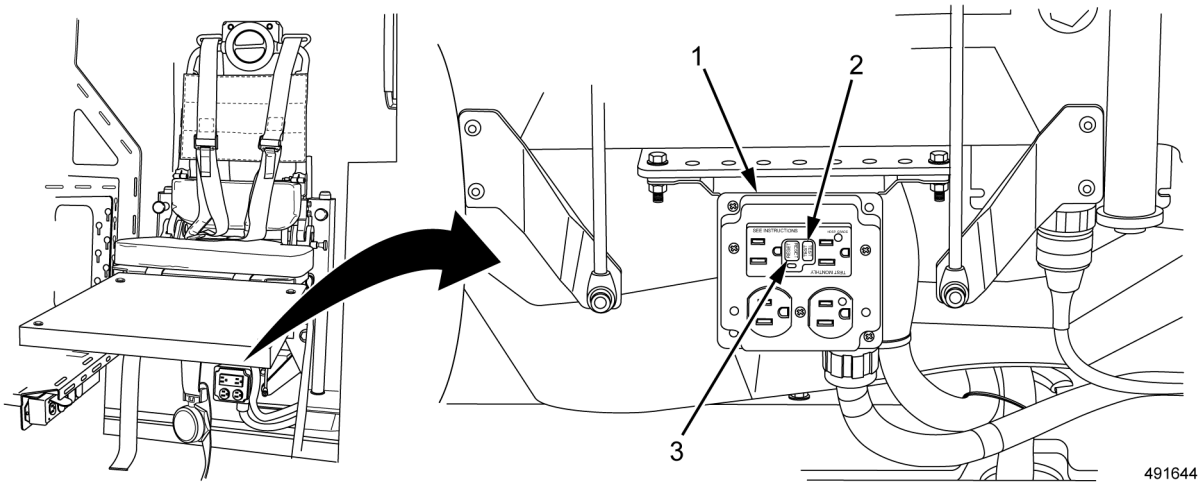


Figure 2. 110V Outlet and GCFI.

a. Press GFCI TEST button (Figure 2, Item 2) on 110V outlet (Figure 2, Item 1).
b. Press GFCI RESET button (Figure 2, Item 3) on 110V outlet (Figure 2, Item 1).
c. If power for AMBULANCE EQUIPMENT still does not operate, notify Field Level Maintenance.

END OF WORK PACKAGE

CHAPTER 4

MAINTENANCE INSTRUCTIONS

FOR

MINE RESISTANT AMBUSH PROTECTED (MRAP) VEHICLE

CREW MAINTENANCE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION

PURPOSE AND USE

To ensure the vehicle is ready for operation at all times, it must be inspected on a regular basis so defects may be found before they result in damage, equipment failure, or injury to personnel. The PMCS table in the following work package contains systematic inspections and services required to maintain the vehicle in mission-ready condition.

GENERAL SERVICE AND INSPECTION PROCEDURES

Always perform PMCS in the same order. If a component does not pass PMCS inspection, troubleshoot it with the instructions in this manual or notify Field Level Maintenance. If a problem is found that is beyond your level of repair, notify Field Level Maintenance.

Inspect the vehicle for the following items:

• Cleanliness – Dirt, grease, oil, and debris may cover up a serious problem. Clean the vehicle prior to performing inspections. Refer to WP 0089, Vehicle Cleaning.

• Nuts and Screws – Check for obvious looseness, missing parts, and bent or broken conditions. Look for chipped paint, bare metal, or rust around screw heads. If a loose screw or nut is found, tighten it or notify Field Level Maintenance.

• Welds – Look for loose or chipped paint, rust, or gaps where parts are welded together. If a cracked weld is found, notify Field Level Maintenance.

• Electrical Wires and Connectors – Look for cracked or broken insulation, bare wires, and loose or broken connections. Tighten loose connections and ensure wires are in good shape. If damaged wires or connectors are found, or any electrical system operates intermittently, notify Field Level Maintenance.

• Fluid Lines, Fittings, and Air Lines – Look for wear, damage, or leaks, and ensure clamps and fittings are tight. Wet spots indicate leaks, but a stain around a fitting or connector can also identify a leak. If a leak comes from a loose fitting or connector, tighten it. Start vehicle, let air tanks fill, shut off engine, and listen for air leaks. If any air leaks are found, notify Field Level Maintenance.

• Fluid Leakage – It is necessary for you to know how fluid leakage affects the status of the MRAP. Following are types/classes of leakage you need to know to be able to determine the status of the MRAP. Learn these leakage definitions and remember - when in doubt, notify Field Level Maintenance. Equipment operation is allowed with minor leakage (Class I or II). Consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify Field Level Maintenance. When operating with Class I or II leaks, continue to check fluid levels as required in the PMCS. Class III leaks should be reported immediately.

Class I: Seepage of fluid indicated by wetness or discoloration that is not great enough to form drops.

Class II: Leakage of fluid great enough to form drops but not enough to cause drops to fall from item being checked/inspected.

Class III: Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

• Damage – Damage is defined as any condition that affects safety or would render the vehicle non-mission capable.

• Corrosion Control – Corrosion control maintenance is a requirement of the vehicle. While performing PMCS, look for rust, peeling paint, blistering, damage that can cause corrosion, or other signs of corrosion. Inspect the entire vehicle as well as the specific areas mentioned in the PMCS. Also look for and always be aware of missing or damaged corrosion preventive compounds. Report problem areas as soon as possible to Field Level Maintenance. Correcting problem areas as soon as possible will maximize the life of the vehicle. Appearance and color of corrosion is dependent on the metal/components involved. Use Table 1. Visual Detection of Corrosion, refer to WP 0001, General Information for types of CPC.

Table 1. Visual Detection of Corrosion.

METAL/COMPONENT	CORROSION
Steel	Powdery, Reddish-Brown Film
Aluminum	Powdery, White Film
Brass	Green Film
Electrical Connection	Green Film

EXPLANATION OF PMCS TABLE

ITEM NO: Provides logical order for PMCS performance and is used as a source number for DA Form 2404, on which your PMCS results will be recorded.

INTERVAL: Indicates when check or service is to be performed.

Before — performed prior to operating the MRAP.

During — performed while MRAP components or systems are in operation.

After — performed immediately after operating the MRAP.

Weekly — performed once a week. If the MRAP has not been operated in a week, also do Before PMCS at the same time.

Monthly — performed once a month. If the MRAP has not been operated in a month, also do Weekly PMCS at the same time.

ITEM TO BE CHECKED/SERVICED: Lists the system, common name, or location of the item to be inspected.

PROCEDURE: Provides instructions for inspecting and servicing items. If a defect is found, repair, fill, remove, or adjust as indicated, or have item repaired or replaced at higher maintenance level.

EQUIPMENT NOT READY/AVAILABLE IF: Provides information for rendering a vehicle non-mission capable when checks or services reveal a defect or deficiency of a component(s) of the vehicle.

END OF WORK PACKAGE

CREW MAINTENANCE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

INITIAL SETUP:

Tools and Special Tools
Extension, socket wrench (WP 0108, Item 19)
Handle, socket wrench (WP 0108, Item 27)
Socket, socket wrench (WP 0108, Item 65)

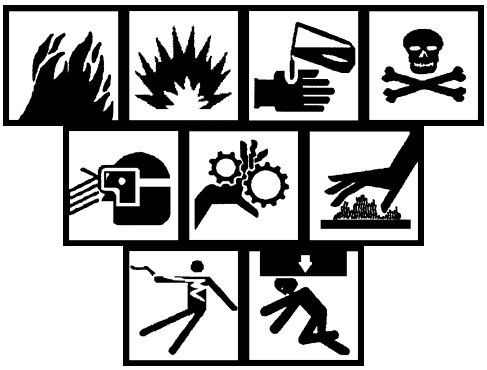
Materials/Parts
Gloves, leather (WP 0110, Item 10)
Gloves, nitrile, large (WP 0110, Item 11)
Goggles, industrial (WP 0110, Item 13)
Rag, wiping (WP 0110, Item 25)

Personnel Required
Crewmember - (2)

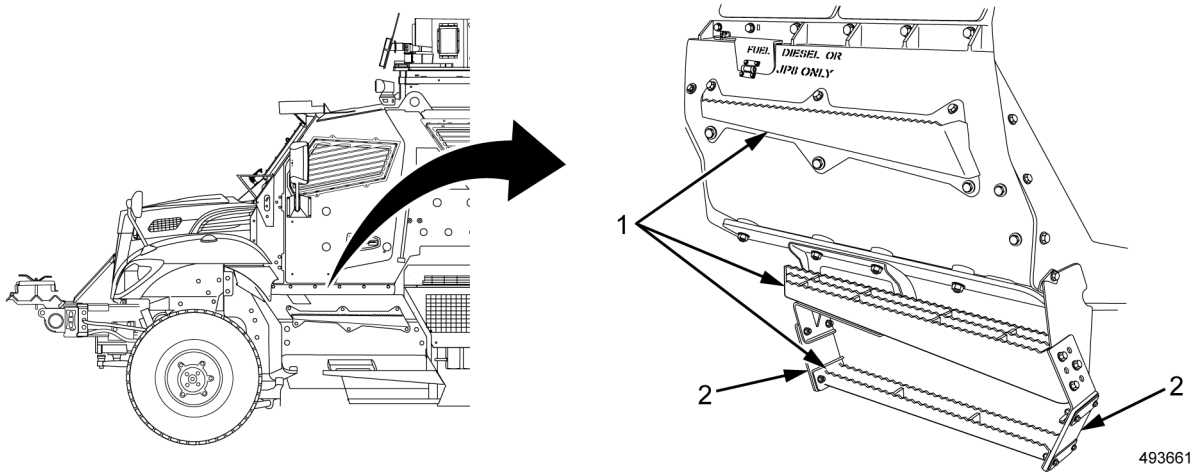
References
WP 0004
WP 0005
WP 0006
WP 0007
WP 0008
WP 0009
WP 0011
WP 0016
WP 0017
WP 0018
WP 0019
WP 0020
WP 0023
WP 0024
WP 0025
WP 0026
WP 0027
WP 0028
WP 0032
WP 0034
WP 0035
WP 0038
WP 0039
WP 0048
WP 0054
WP 0062
WP 0065
WP 0073
WP 0077
WP 0074
WP 0082
WP 0089
WP 0090
WP 0091
WP 0092
WP 0093
WP 0095
WP 0096
WP 0097
WP 0098
WP 0100
WP 0101
WP 0102
AR 385-10

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)

Table 1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			WARNING  Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with Standard Operating Procedures (SOP). Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage. Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel. Do not fill fuel tank with engine running. Do not overfill fuel tank. Clean fuel spills immediately according to SOP. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Before performing any maintenance procedure, ensure vehicle is parked on level surface, engine is off, parking brake is set, transmission is in NEUTRAL (N), and wheels are chocked. Wear eye protection and stay clear of rotating parts and hot surfaces. Make sure all electrical tools are grounded. Use extreme caution when working under vehicle. Keep first-aid and fire-control equipment available during all operation and maintenance procedures. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.	
1	Before	Exterior of Vehicle	1. Inspect for missing, damaged, loose, leaking, dirty, or corroded components that would impair operation. 2. Visually inspect under vehicle for evidence of fluid leakage.	Any damage that prevents operation. Any fuel or Class III oil or coolant leak.
2	Before	Armor panels	1. Inspect for missing, damaged, loose, leaking, dirty, or corroded components that would impair operation. 2. Verify that all nuts and bolts are secure. Notify Field Level Maintenance to torque loose nuts and bolts as necessary.	Any damage that prevents operation.
3	Before	Hood Mirrors	1. Inspect for broken, cracked or loose mirrors. Check that visibility is not impaired due to dirty mirrors. Check that mirrors move freely. Refer to AR 385-10.	
4	Before	Door Steps and Rubber Mounts	**NOTE** Driver side shown; commander side similar. 1. Inspect three door steps (Figure 1, Item 1) for bent, missing, or damaged steps. 2. Inspect two rubber mounts (Figure 1, Item 2) for cracks or cuts.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 1. Door Steps.	
5	Before	Exterior Transparent Armor and Riot Guard	**CAUTION** Do not use ammonia or any cleaning product that contains ammonia to clean transparent armor. Ammonia breaks down the bond between the inner and outer layers of transparent armor. Do not use aerosol window cleaners. Aerosol propellent may cause transparent armor separation. Failure to comply may result in damage to equipment. 1. Inspect transparent armor for damage that would impair operator's vision. 2. Inspect surface of transparent armor for breaks, damage, scratches, gouges, delamination, tape, decals, adhesives, or impaired visibility that would impair operator's vision. Refer to AR 385-10. 3. Inspect windshield frames (Figure 2, Item 1) for damage.	Frames are damaged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

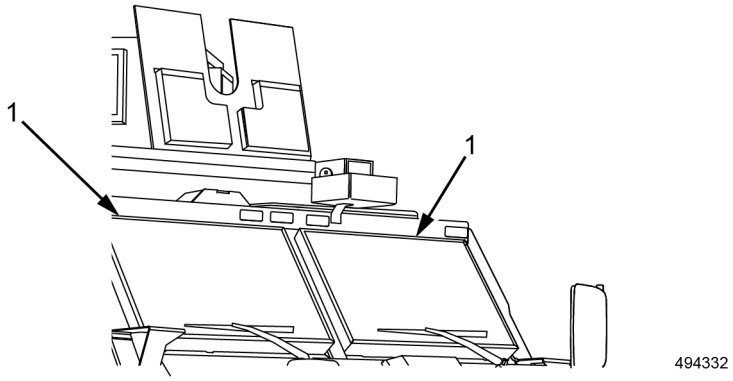


Figure 2. Exterior Transparent Armor.

NOTE

Driver side shown; commander side similar.

4. Inspect riot guards (Figure 3, Item 1 and 2) for damage.

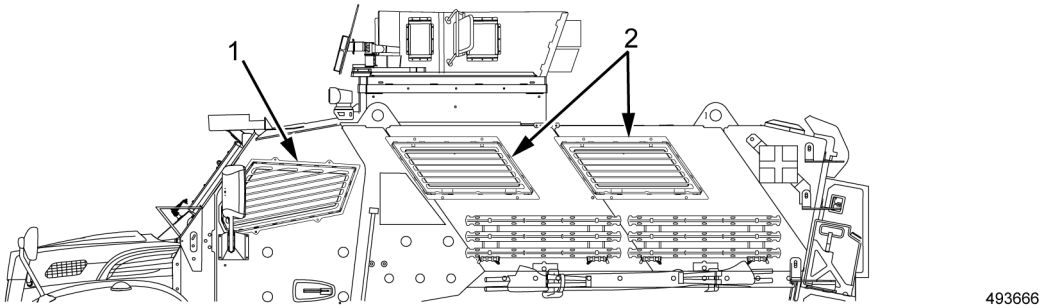
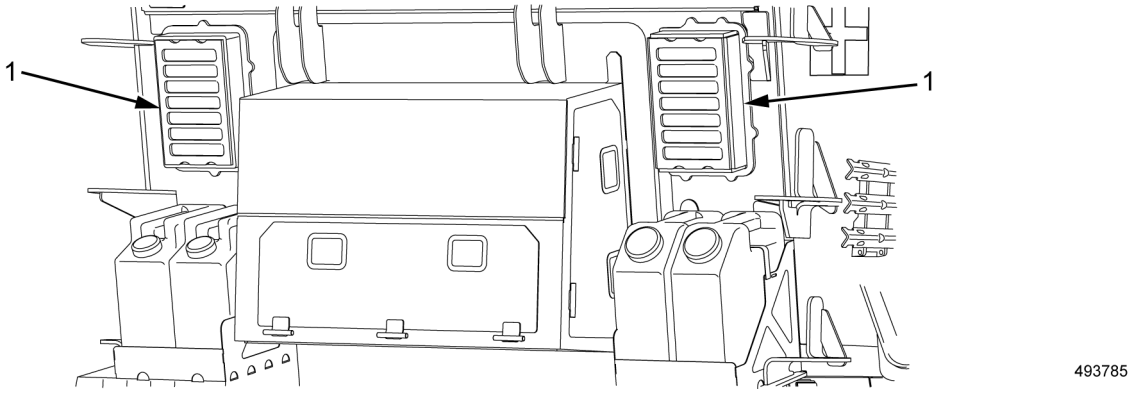


Figure 3. Side Riot Guards.

5. Inspect two rear riot guards (Figure 4, Item 1) for damage.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
Figure 4. Rear Riot Guards.				
6	Before	Stowage Bag, and Hand Rail	**NOTE** Driver side shown; commander side similar. 1. Inspect stowage bag (Figure 5, Item 3) for wear or damage. 2. Inspect hand rail (Figure 5, Item 2) and four bolts (Figure 5, Item 1) for missing bolts, loose or damage.	

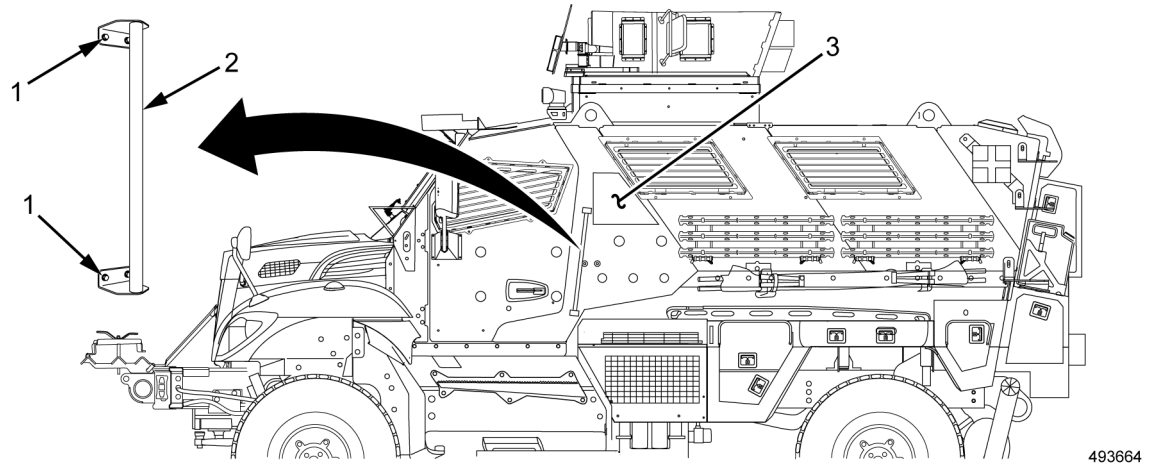
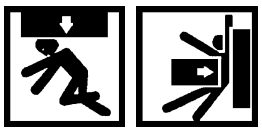


Figure 5. Hand Rail and Stowage Bag.

7	Before	Exterior Battery Box Armor Door	**WARNING**  Exterior armor doors are heavy. Use caution when opening and closing exterior armor doors. Ensure that all body parts and gear are clear before closing exterior armor doors. Failure to comply may result in serious injury or death to personnel. Access door can swing free when exterior armor door is opened or closed. Ensure body parts are clear when lowering and raising exterior armor door. Failure to comply may result in injury to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Check battery box armor door mounting bolts (Figure 6, Item 1) and hinges (Figure 6, Item 2) for looseness or damage.	Mounting bolts or hinges are damaged.

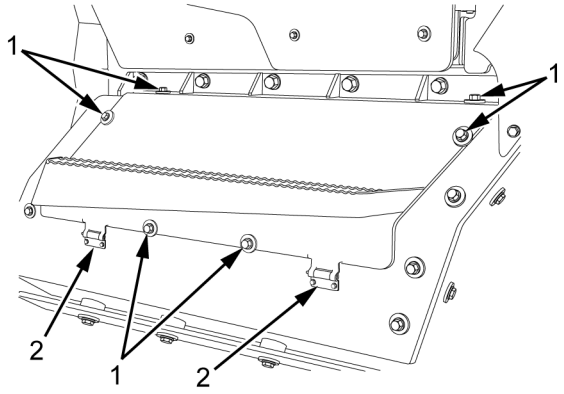
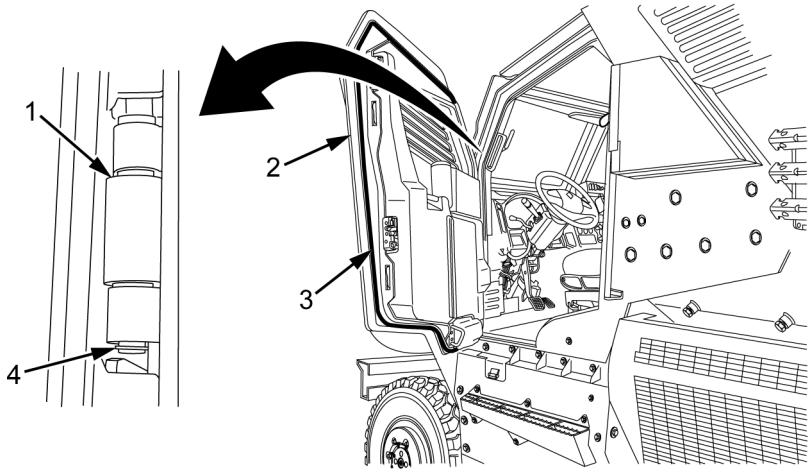


Figure 6. Exterior Battery Box Armor Door.

8	Before	Side Doors	**NOTE** Driver side shown; commander side similar. 1. Check hinges (Figure 7, Item 1), pins (Figure 7, Item 4), and mounting hardware of side door (Figure 7, Item 2) for cracked or broken hinges and missing or loose pins. 2. Inspect door seal (Figure 7, Item 3) for cuts, tears, or missing door seal. 3. Verify side door (Figure 7, Item 2) opens and closes properly. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.	Door will not completely close.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Figure 7. Side Door.	
			4. Verify operation of combat locks. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.	Combat locks do not lock or unlock.
9	Before	Rugged All-Purpose Cargo Carrier (RACC)	**NOTE** Driver side shown; commander side similar. 1. Inspect RACC (Figure 8, Item 1) retaining pins (Figure 8, Item 2) and hinge pins (Figure 8, Item 3) for missing or damaged components.	

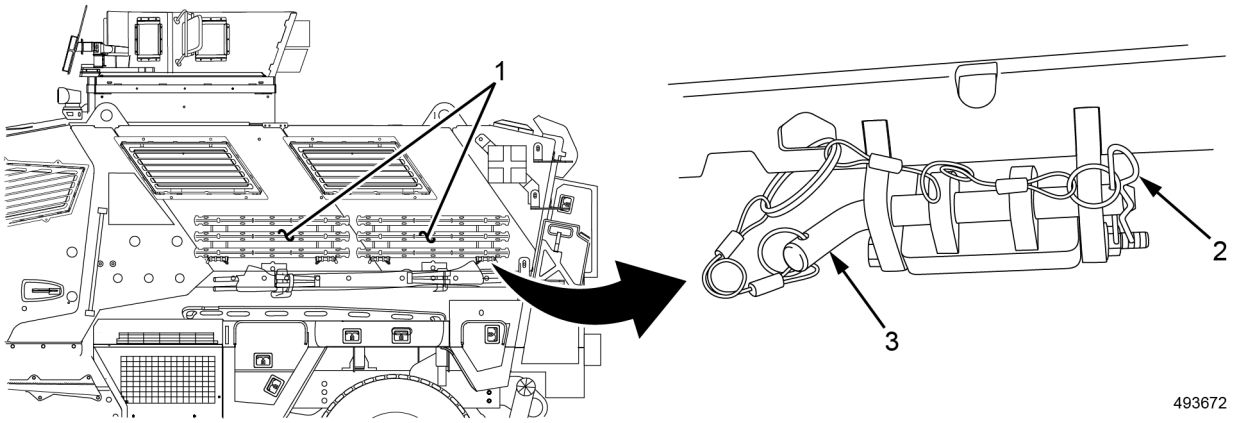
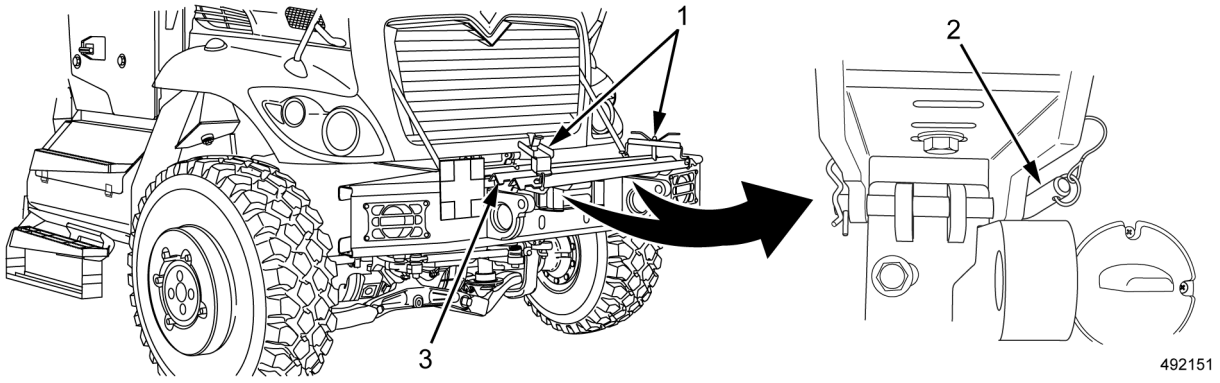
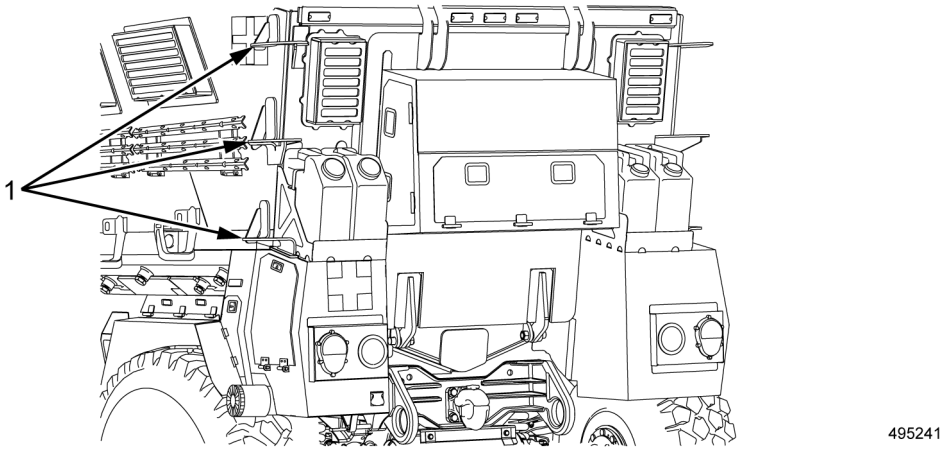
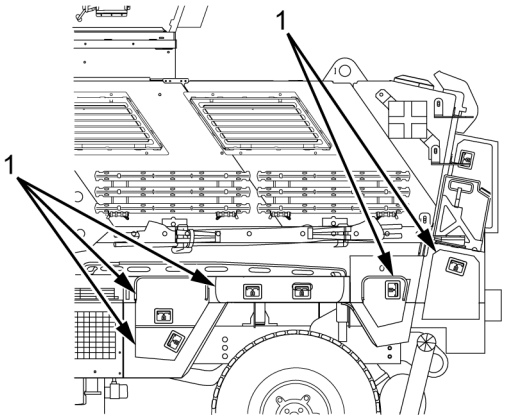


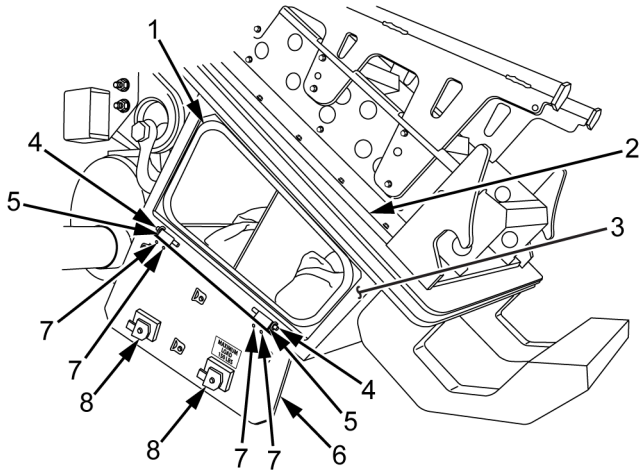
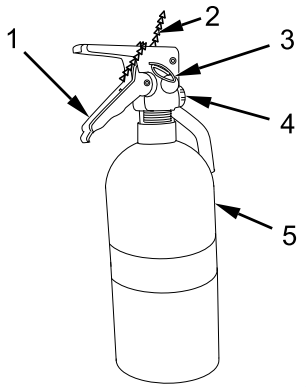
Figure 8. Rugged All-Purpose Cargo Carrier (RACC).

			2. Inspect two front tow rack brackets (Figure 9, Item 1) for missing or damaged components. 3. Inspect two RACC hinge pins (Figure 9, Item 2) and rack (Figure 9, Item 3) for missing or damaged components.	



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Figure 9. Front RACC.	
10	Before	Steps	**NOTE** Driver side shown; commander side similar. 1. Inspect rear steps (Figure 10, Item 1) for missing bolts or damage.	
			 Figure 10. Rear Steps.	
11	Before	Red Cross Folding Sign	**NOTE** There are five red cross signs; one on front bumper, one on each side towards rear of vehicle, one on back of driver side rear stowage box, and one on the roof at the rear of the Objective Gunners Protection Kit (OGPK). 1. Inspect five red cross folding signs and lock pins for missing or damaged components.	
12	Before	External Stowage Boxes	**NOTE** Driver side shown; commander side similar. There are eight side stowage boxes, four on each side of vehicle. One box on each side has two doors. There is one external stowage box with three access doors on the rear door/ramp. 1. Check that access doors are operational (Figure 11, Item 1).	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 11. Driver Side External Stowage Box.	
			2. Inspect stowage box (Figure 12, Item 1) on rear of door/ramp for damage. **NOTE** Rear door/ramp should be lowered to check access doors, door handles, door seal, hinges, pins, and mounting hardware. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation. Access door on driver side shown; two others similar. 3. Check access doors (Figure 12, Item 6), door handles (Figure 12, Item 8), door seal (Figure 12, Item 1), hinges (Figure 12, Item 5), pins (Figure 12, Item 4), and mounting hardware (Figure 12, Item 7) on rear external stowage box (Figure 12, Item 3) on rear door/ramp (Figure 12, Item 2) for missing or damaged components.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 545241	
			Figure 12. Rear External Stowage Box.	
13	Before	Portable Fire Extinguisher	**NOTE** Refer to WP 0074, On-Vehicle Equipment Load Plan for location of fire extinguishers. 1. Inspect two portable fire extinguishers (Figure 13, Item 5) for any signs of damage or leaks. Make sure handles (Figure 13, Item 1) are not broken, and safety seals (Figure 13, Item 2) and safety pins (Figure 13, Item 3) are present. Refer to AR 385-10. 2. Check that portable fire extinguisher bottles are secure in stowage brackets. Refer to AR 385-10. 3. Verify extinguisher pressure gauge (Figure 13, Item 4) needles are in GREEN zone.	Fire extinguisher handle is missing or broken, or safety seal or safety pin missing. Fire extinguisher bottle cannot be secured in stowage bracket. Pressure gauge needle is not in GREEN zone.
			 317791	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
Figure 13. Portable Fire Extinguisher.				
14	Before	Exterior Fire Suppression System (FSS) Extinguishers and Nozzles	**NOTE** The vehicle has three exterior FSS extinguishers. 1. Verify that all fire suppression extinguishers are mounted correctly on driver side (Figure 14, Item 1) and commander side (Figure 15, Item 1) of vehicle. 2. Check all bolts, nuts, and other fasteners on FSS extinguisher brackets for tightness. 3. Verify extinguisher pressure gauge (Figure 14, Item 2) and (Figure 15, Item 2) needle is in GREEN zone. 4. Inspect tire nozzles, hoses, and fittings for obstructions, looseness, or cracks. Check for missing nozzle caps. Refer to WP 0065, Emergency Operation - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	Any FSS extinguisher is missing. FSS extinguishers are not securely mounted. Pressure gauge needles are not in GREEN zone. Nozzles are obstructed or hoses are broken.

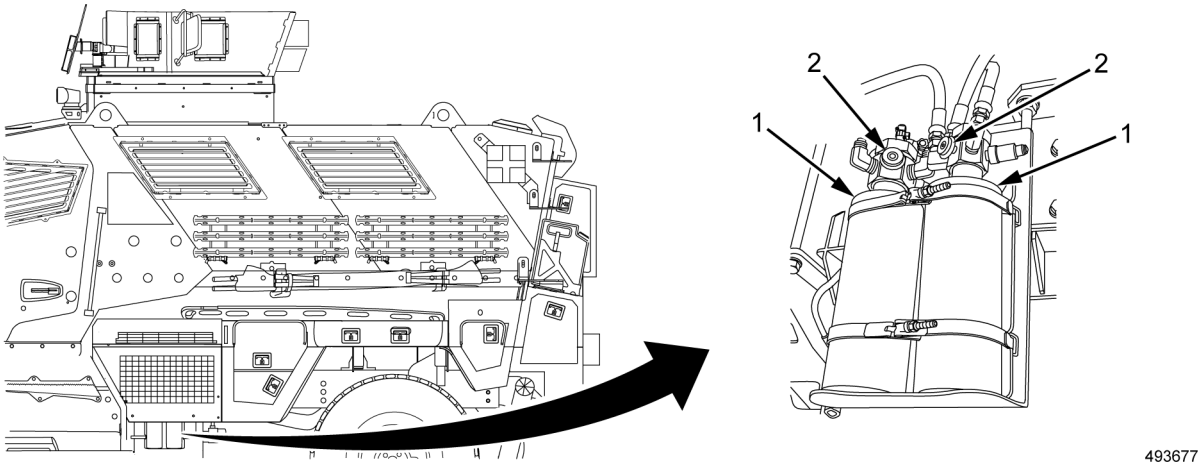
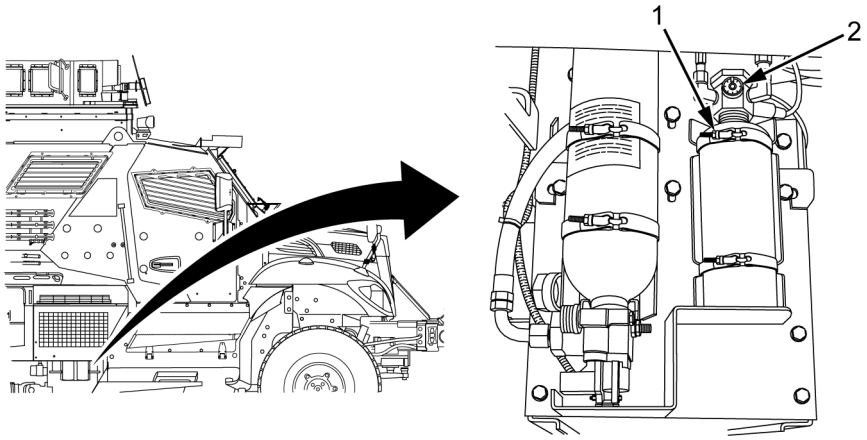


Figure 14. Exterior Driver Side FSS Extinguishers.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Figure 15. Exterior Commander Side FSS Extinguisher.	
15	Before	Exterior Automatic Fire Extinguishing System (AFES) Extinguisher	**NOTE** The vehicle has one exterior AFES extinguisher. 1. Verify that fire extinguisher (Figure 16, Item 1) is mounted correctly on commander side of vehicle. 2. Check all bolts, nuts, and other fasteners on AFES extinguisher bracket for tightness. 3. Verify extinguisher pressure gauge (Figure 16, Item 2) meets minimum requirements for ambient temperature and pressure, according to the information from fire extinguisher label (Figure 17, Item 1). 4. Inspect engine nozzles, hoses, and fittings for obstructions, looseness or cracks. Check for missing nozzle caps. Refer to WP 0065, Emergency Operation - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	AFES extinguisher is missing. AFES extinguisher not securely mounted. Pressure gauge does not meet minimum requirement for ambient temperature and pressure. Nozzles are obstructed, or hoses are broken.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

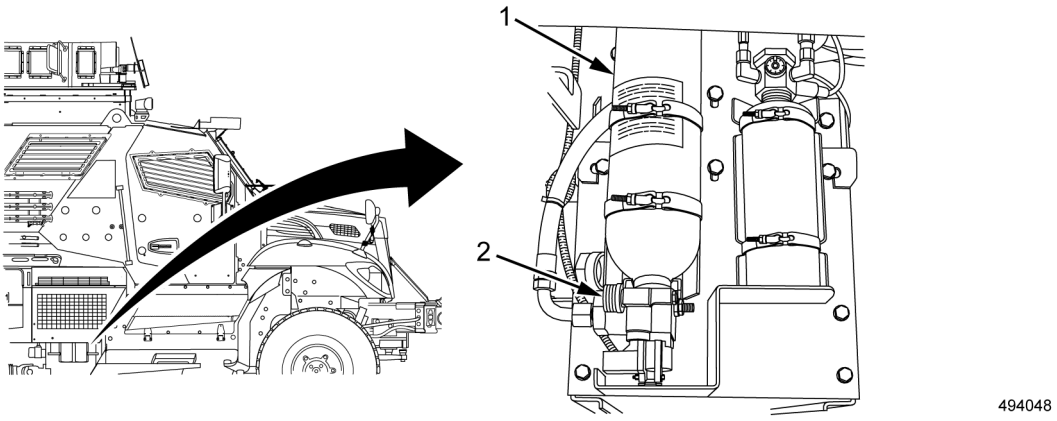


Figure 16. Exterior AFES Extinguisher.

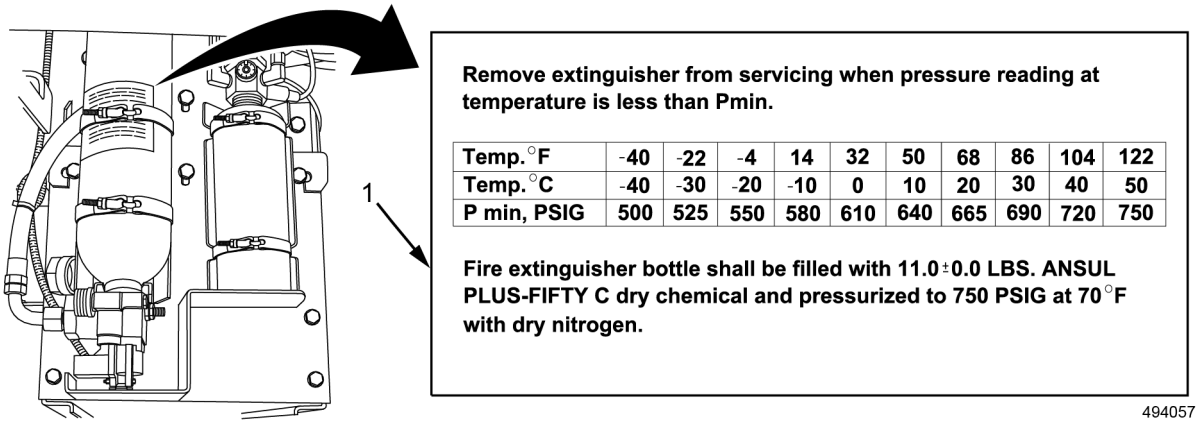
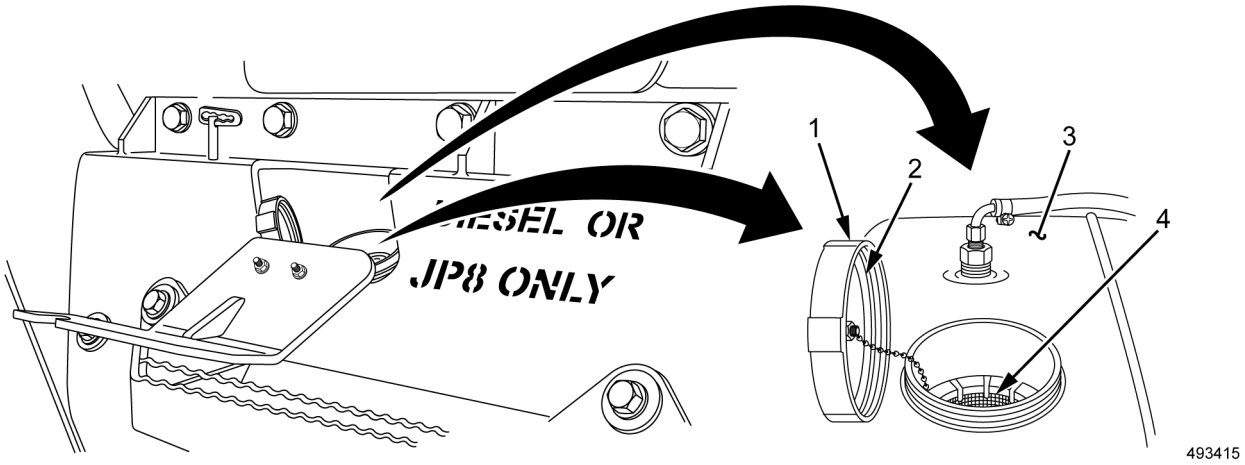

1
Remove extinguisher from servicing when pressure reading at temperature is less than Pmin.
Temp. °F -40 -22 -4 14 32 50 68 86 104 122
Temp. °C -40 -30 -20 -10 0 10 20 30 40 50
P min, PSIG 500 525 550 580 610 640 665 690 720 750
Fire extinguisher bottle shall be filled with 11.0 ± 0.0 LBS. ANSUL PLUS-FIFTY C dry chemical and pressurized to 750 PSIG at 70 °F with dry nitrogen.
494057

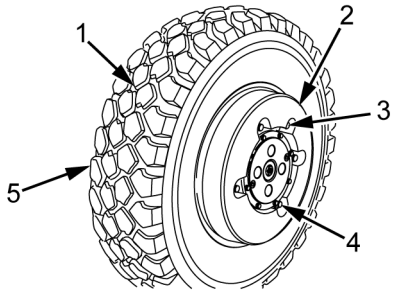
Figure 17. Exterior AFES Extinguisher.

16	Before	Fuel Tank Cap	**WARNING**	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher readily available. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel. Be alert at all times for the smell of fuel. Hot engines and components can ignite fuel. If smell is detected, shut down vehicle immediately. Failure to comply may result in damage to equipment. **NOTE** Exterior fuel tank armor access door must be opened. Refer to WP 0034, Operation Under Usual Conditions - Vehicle Fueling Operation. 1. Check for missing or damaged fuel tank cap (Figure 18, Item 1). 2. Twist fuel tank cap (Figure 18, Item 1) counterclockwise until free from fuel tank (Figure 18, Item 3). 3. Remove fuel tank cap (Figure 18, Item 1) from fuel tank (Figure 18, Item 3). 4. Check that rubber seal (Figure 18, Item 2) in fuel tank cap (Figure 18, Item 1) is present and is not damaged. 5. Check fuel tank strainer (Figure 18, Item 4) for dirt and debris. Remove any debris found. 6. Install fuel tank cap (Figure 18, Item 1) on fuel tank (Figure 18, Item 3). 7. Twist fuel tank cap (Figure 18, Item 1) clockwise until secured on fuel tank (Figure 18, Item 3).	Fuel tank cap is missing or damaged. Fuel tank strainer is visibly clogged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Figure 18. Fuel Tank Cap and Strainer.	
17	Before	Wheels and Tires	**NOTE** Driver side front tire shown; others similar.	
			1. Visually inspect for low or flat tires (Figure 19, Item 5). If tire is low, inflate to appropriate tire air pressure. Refer to WP 0097, Tire Inflation Procedure.	Any tire does not maintain operational tire air pressure.
			2. Check tread depth (Figure 19, Item 1), and note if tread is evenly worn.	Any tire has unevenly worn tread or tread depth less than 1/8 in. (3.2 mm).
			3. Check tires (Figure 19, Item 5) for cuts, gouges, cracks, or other damage.	Any tire has wear or damage that allows ply or belt material to be exposed through tread or sidewall. Any tire has tread or sidewall separation.
			4. Check CTIS covers (Figure 19, Item 2) for cuts, gouges, cracks, or other damage.	
			5. Check if valve caps (Figure 19, Item 3) are missing, broken, or damaged.	
			6. Check visible wheel nuts and wheel studs (Figure 19, Item 4) for obvious looseness or damage. Notify Field Level Maintenance to torque loose wheel nuts as necessary.	Wheel nuts and/or wheel studs are missing, loose, or damaged.

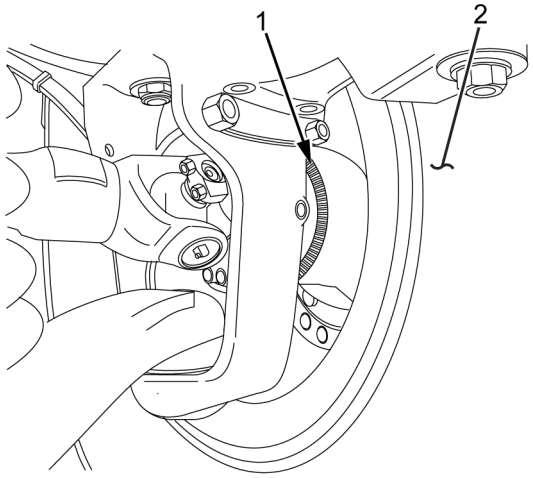
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:



497761

Figure 19. Tires.

			7. Check wheel hub oil seal (Figure 20, Item 2) on inside of wheel (Figure 20, Item 1) for leaks.	Class III oil leak.



491582

Figure 20. Wheel Hub Seal.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
18	Before	Steering	**NOTE** Driver side shown; commander side similar. 1. Check that all nuts and bolts are secure. 2. Check drag link (Figure 21, Item 5) for cracks or bends. Check for missing or cracked drag link grease boots (Figure 21, Item 4). 3. Check pitman arms (Figure 21, Item 2) for cracks or bends. 4. Check steering column shaft (Figure 21, Item 3) for damage. 5. Check steering gears (Figure 21, Item 1) for damage, cracks, and leaks.	Nuts or bolts are loose or missing. Drag link is cracked or bent. Pitman arms are cracked or bent. Evident damage. Steering gears are damaged or cracked. Any Class III leak.

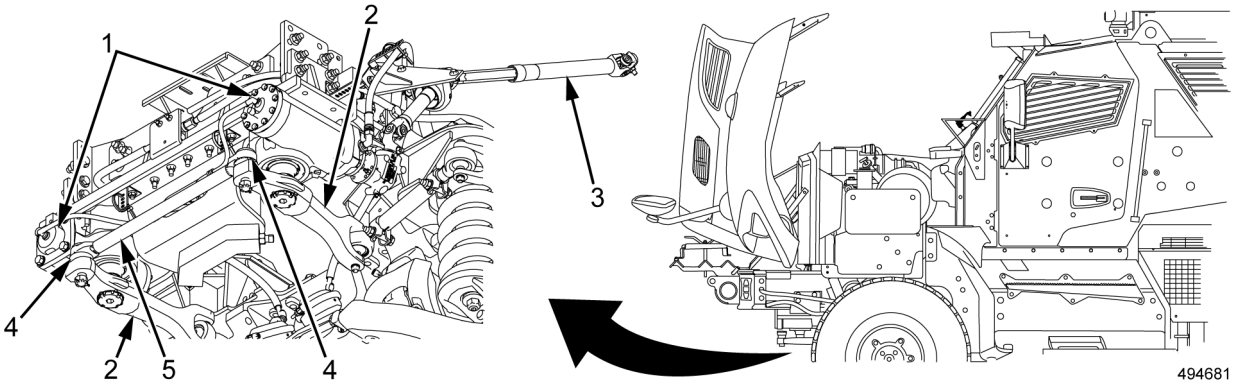


Figure 21. Steering Components.

			6. Check hydraulic hoses (Figure 22, Item 1) and fittings for cracks, splits, and leaks.	Hydraulic lines/fittings are cracked, split, or damaged. Any Class III leak.
			7. Check tie rods (Figure 22, Item 4) for bends, breaks, or excessive wear. Check for missing or cracked tie rod dust boots (Figure 22, Item 2).	Tie rods are bent, broken, or excessively worn.
			8. Check steering knuckles (Figure 22, Item 3) for bends or cracks.	Steering knuckles are bent or cracked.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

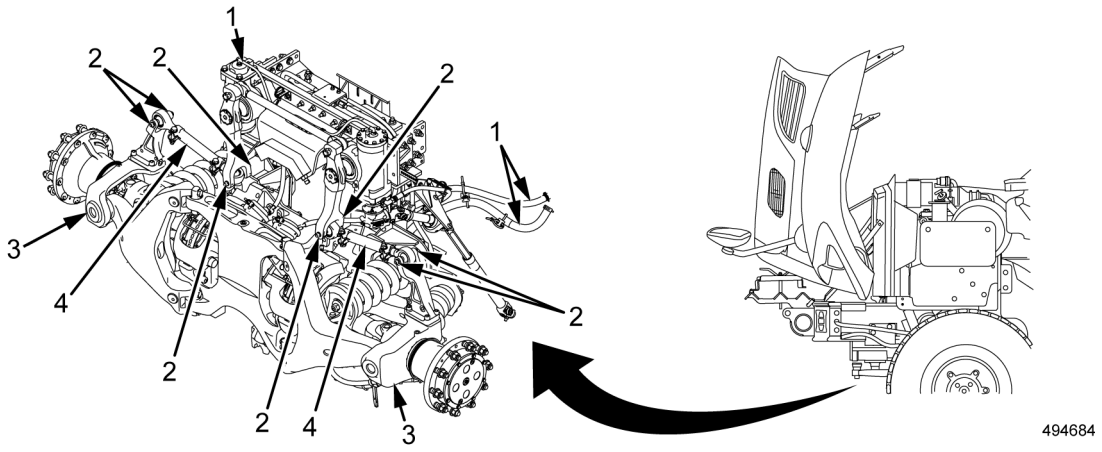


Figure 22. Tie Rods and Steering Knuckles.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
19	Before	Suspension	**NOTE** Shock absorbers may have a thin film of oil on the outer surface due to a normal condition known as misting. Misting is not considered a leak and will not be evident as a stream of fluid. Driver side shown; commander side similar. 1. Check shock absorbers (Figure 23, Item 1) for leaks and damage.	Any Class III leak.
			2. Inspect rubber bump stops (Figure 23, Item 2) and coil springs (Figure 23, Item 3) for damage.	Rubber bump stops and/or coil springs are missing, broken, or damaged.
			3. Check for missing, broken, or loose bolts; missing or damaged bushings; and broken or loose, mounting parts.	Any mounting parts are missing, broken, or damaged.

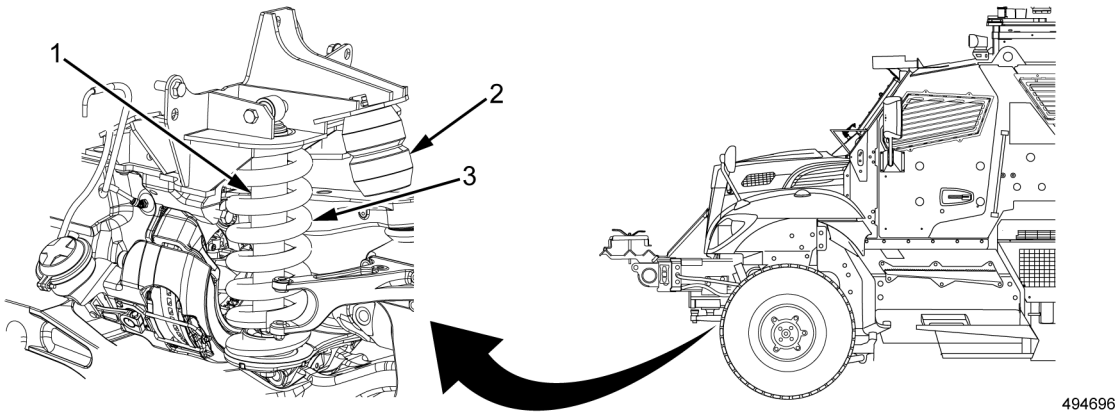
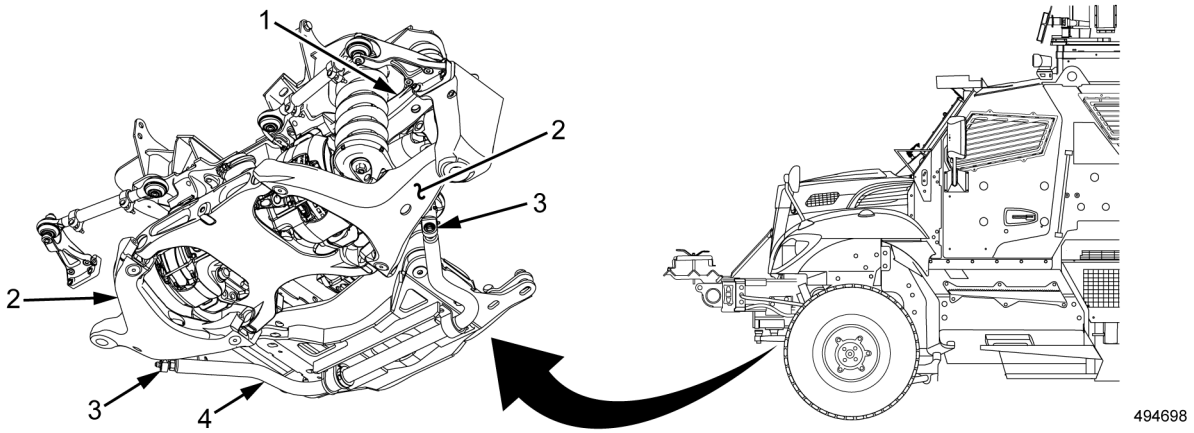


Figure 23. Shock Absorber, Coil Spring, and Bump Stop.

			NOTE Commander side shown; driver side similar. 4. Inspect upper control arm (Figure 24, Item 1) and lower control arms (Figure 24, Item 2) for cracks, bends, or obvious damage.	Control arms are broken, damaged, or missing mounting parts.
			5. Inspect front sway bar (Figure 24, Item 4) and sway bar end links (Figure 24, Item 3) for cracks, bends, or obvious damage.	Sway bar or end links are broken, damaged, or missing mounting parts.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 24. Control Arms, Sway Bar, and End Links.	
20	Before	Brakes	**WARNING** Air system is under pressure. Wear eye goggles and gloves. Do not disconnect any air system fitting. Hoses may whip and injure personnel, and air under pressure can penetrate skin. Failure to comply may result in serious injury or death to personnel. Check air brake system function while vehicle is on a firm, level surface clear of all personnel, buildings, and equipment. Failure to comply may result in serious injury or death to personnel and damage to equipment. **NOTE** Driver side shown; commander side similar. 1. Check front and rear brake hoses (Figure 25, Item 1) and (Figure 26, Item 1) for cracked, worn, or frayed hoses, and for secure couplings. 2. Check front and rear brake chambers (Figure 25, Item 5) and (Figure 26, Item 2) for cracks, rust, dents, secure mounting, and missing caging bolt and nut.	Hoses are cracked, worn, or frayed, or couplings are not secure. Brake chambers are cracked or loose.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Check brake calipers (Figure 25, Item 2) and (Figure 26, Item 5) for cracks, rust, dents, and secure mounting.	Calipers are cracked or loose.
			4. Check front and rear brake rotors (Figure 25, Item 3) and (Figure 26, Item 4) and pads (Figure 25, Item 4) and (Figure 26, Item 3) for cracks, rust, dents, and secure mounting.	Front and rear brake rotors, calipers, or pads are cracked or damaged.

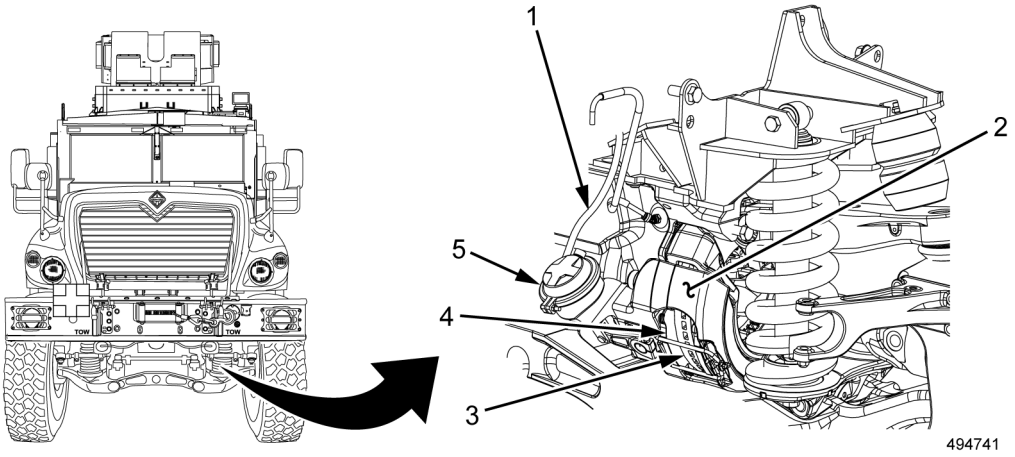


Figure 25. Driver Side Front Rotors.

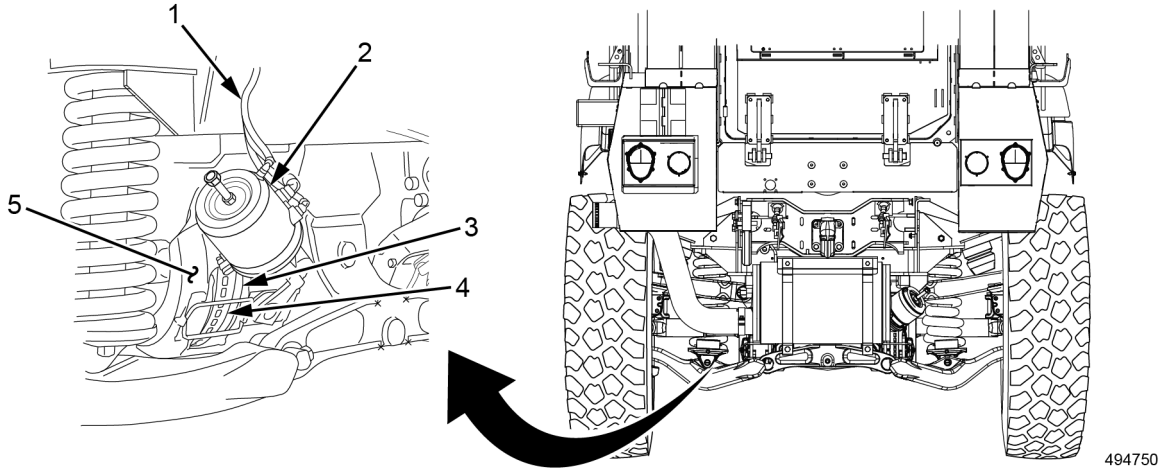
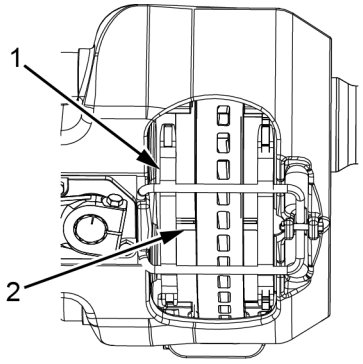
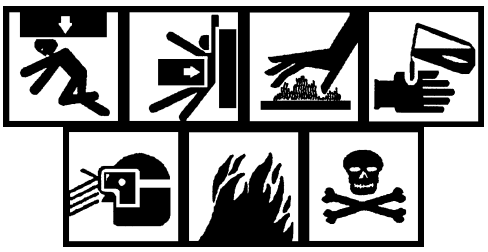
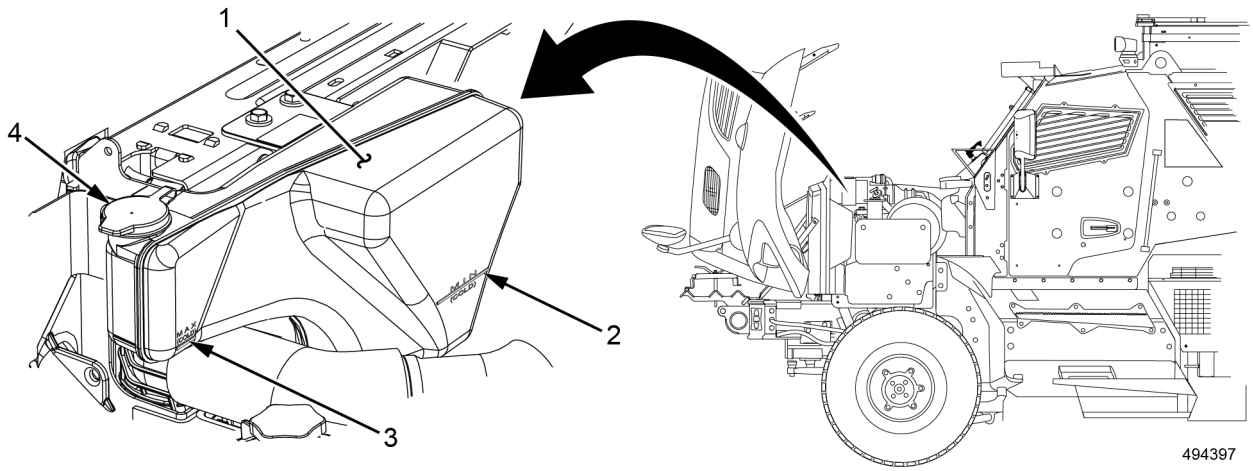
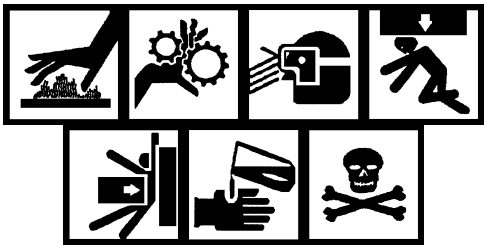


Figure 26. Driver Side Rear Brakes.

			NOTE Driver side shown; commander side similar. 5. Check front and rear pads (Figure 27, Item 1) thickness for presence of brake pad groove (Figure 27, Item 2).	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 494744 Figure 27. Brake Pad Groove.	
21	Before	Radiator Overflow Reservoir Level	**WARNING**  Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning or pinching personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. Ensure all personnel stay clear of the radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.	
			CAUTION Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment.	
			Do not overfill radiator overflow reservoir. Failure to comply may result in damage to equipment.	
			1. Inspect radiator overflow reservoir (Figure 28, Item 1) and cap (Figure 28, Item 4) for damage and leakage.	Radiator overflow reservoir or cap is missing or damaged enough to allow leakage.
			2. Inspect coolant level in radiator overflow reservoir (Figure 28, Item 1) when engine is cold. Check level is between Minimum (MIN) (COLD) (Figure 28, Item 2) and Maximum (MAX) (COLD) (Figure 28, Item 3) marks. Refer to WP 0093, Coolant Service.	Any Class III leak exists or radiator overflow reservoir is empty.
			a. If coolant level is below MIN (COLD), add 50/50 mixture of coolant and water to radiator overflow reservoir (Figure 28, Item 1).	Coolant level is below MIN (Cold).
			b. If coolant level is above MAX (COLD), notify Field Level Maintenance to drain coolant as necessary to bring coolant level to between MIN (COLD) and MAX (COLD) marks.	Coolant level is above MAX (Cold).

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 28. Radiator Overflow Reservoir.	
22	Before	Engine Oil Level	**WARNING**  Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning or pinching personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel. **CAUTION** Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment. Do not overfill engine oil. Failure to comply may result in damage to equipment. **NOTE** Rubber seal should fit completely in fill tube, and dipstick should not move freely. 1. Check engine oil dipstick (Figure 30, Item 1) is present and not damaged. 2. Check engine oil level as follows: a. Turn engine oil dipstick handle (Figure 29, Item 1) counterclockwise. b. Remove engine oil dipstick (Figure 30, Item 1) from fill tube (Figure 29, Item 2). c. Wipe engine oil dipstick (Figure 30, Item 1) with clean rag. d. Insert engine oil dipstick (Figure 30, Item 1) into fill tube (Figure 29, Item 2) until fully seated.	If overfull, or if vehicle has Class III leak.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			e. Remove engine oil dipstick (Figure 30, Item 1) from fill tube (Figure 29, Item 2). Oil level should be within OPERATING RANGE (Figure 30, Item 2) hash marks on the dipstick.	

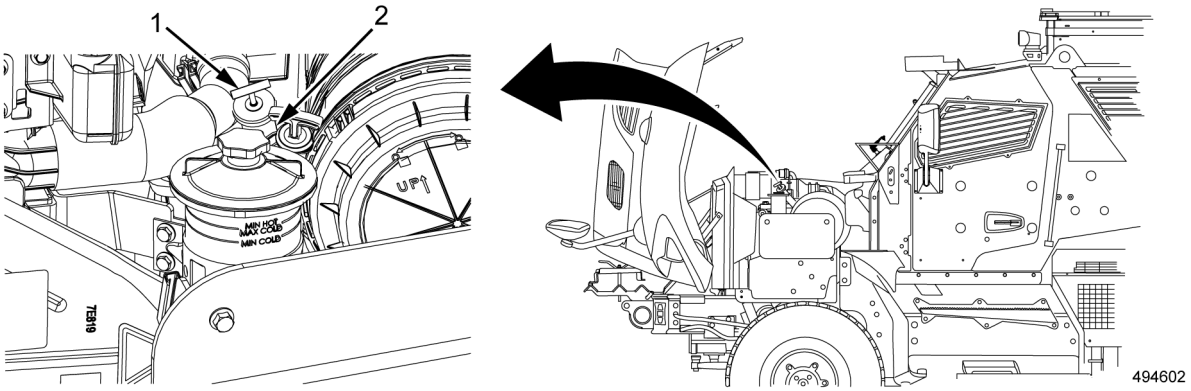
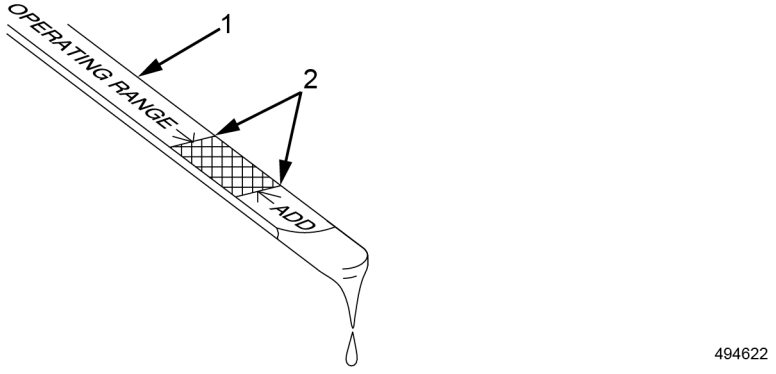
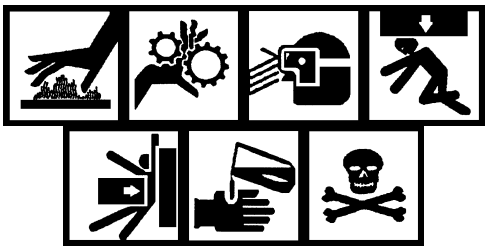


Figure 29. Engine Oil Dipstick.

			f. Wipe engine oil dipstick (Figure 30, Item 1) clean with rag and perform steps d and e to verify reading. g. If oil level is low, add engine oil. Refer to WP 0090, Engine Oil Service. h. If oil level is above OPERATING RANGE hash marks (Figure 30, Item 2) on the engine oil dipstick (Figure 30, Item 1), notify Field Level Maintenance to drain oil as necessary to bring oil level to middle of OPERATING RANGE hash marks. i. Install engine oil dipstick (Figure 30, Item 1) in fill tube (Figure 29, Item 2). j. Turn engine oil dipstick (Figure 30, Item 1) clockwise until snug.	Oil level is above OPERATING RANGE hash marks on dipstick.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
Figure 30. Engine Oil Dipstick Operating Range.				
23	Before	Power Steering Fluid	**WARNING**  Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel. Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Failure to comply may result in serious injury or death to personnel. Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel. **CAUTION** Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment. Do not overfill power steering fluid reservoir. Failure to comply may result in damage to equipment.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Inspect power steering reservoir (Figure 31, Item 5) and cap (Figure 31, Item 1) for leaks, damage, and secure mounting.	Power steering reservoir or cap is missing, loose, or damaged enough to allow leakage.
			2. Inspect power steering reservoir hoses (Figure 31, Item 4) and connections (Figure 31, Item 3) for looseness, leaks, and damage.	Components are damaged or Class III leaks are found.
			3. Inspect power steering fluid level as follows: a. Ensure that fluid is at the MAX COLD/MIN HOT level (Figure 31, Item 2) on reservoir when system is cold.	Reservoir is empty.

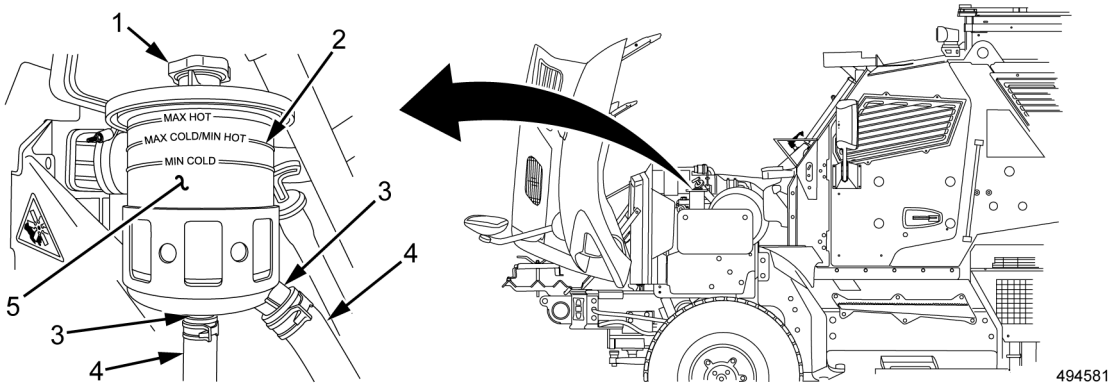
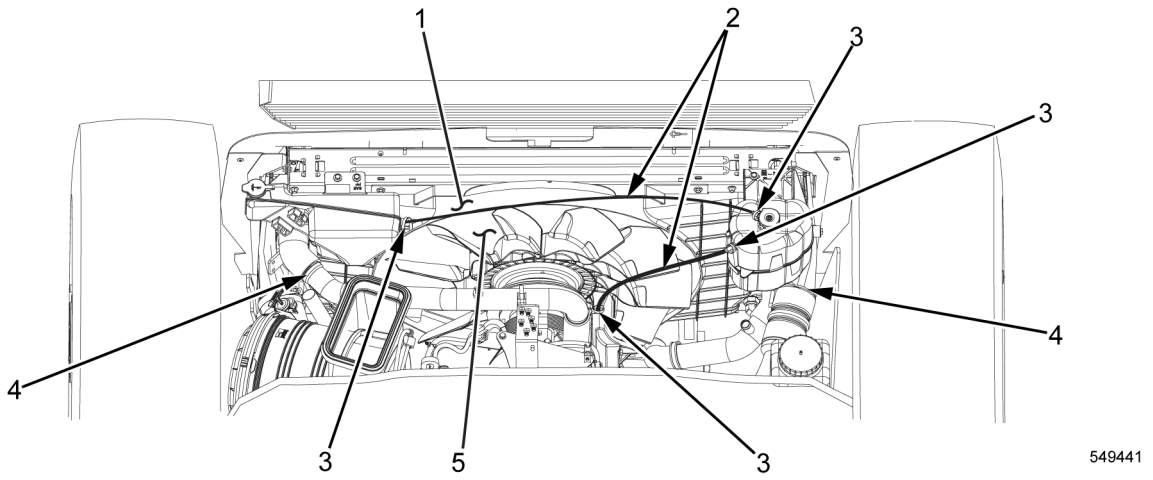
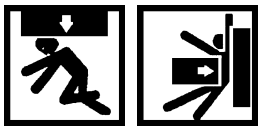
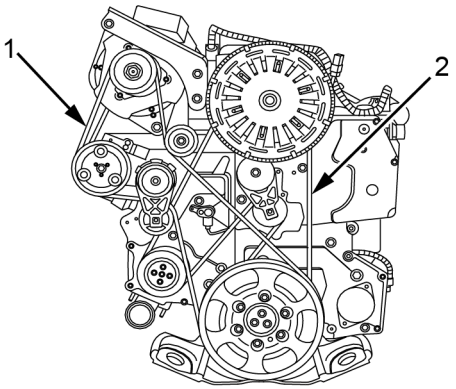
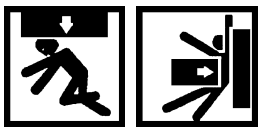


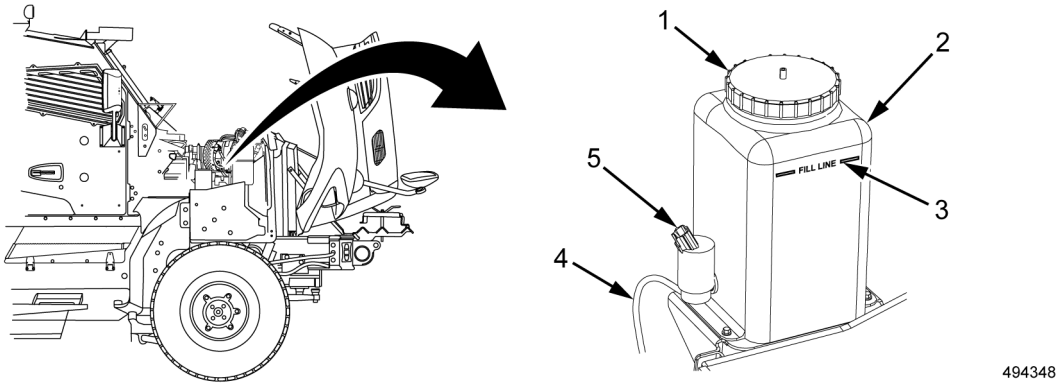
Figure 31. Power Steering Fluid Reservoir.

			b. If fluid is below MAX COLD/MIN HOT mark, add fluid. Refer to WP 0100, Power Steering Fluid Service. c. If fluid is above MAX COLD/MIN HOT mark, notify Field Level Maintenance to drain power steering fluid as necessary to bring fluid level to MAX COLD/MIN HOT level.	
24	Before	Radiator and Charge Air Cooler (CAC)	**WARNING** Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Failure to comply may result in serious injury or death to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Cooling system components become pressurized and extremely hot during normal operation. To prevent serious injury from hot coolant or scalding steam that escapes when removing radiator cap, radiator overflow cap, or deaeration tank pressure cap; ensure to allow engine to cool for 15 minutes, wrap a thick cloth around cap to be removed, loosen cap slowly one-quarter to one-half turn counterclockwise, and pause to allow pressure to release, and then continue to turn cap counterclockwise to remove. Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.	
			CAUTION Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment.	
			1. Check radiator (Figure 32, Item 5) for damage, looseness, or dirt buildup.	Radiator damage that would hinder operation.
			2. Check radiator (Figure 32, Item 5), hoses (Figure 32, Item 2), and connections (Figure 32, Item 3) for leaks.	Any leaks.
			3. Inspect Charge Air Cooler (CAC) system (Figure 32, Item 4) mounting-to-radiator connections for cracks. Check hoses (Figure 32, Item 2) for weakness, cracks, and ruptured/worn areas. Check connections (Figure 32, Item 3) for tightness and signs of corrosion or rust.	Damage to CAC system resulting in unfiltered air entering system.
			4. Inspect fan shroud (Figure 32, Item 1) for missing, damaged, loose, leaking, dirty, or corroded components that would impair operation.	Any damage that prevents operation.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 32. Fan Shroud.	
25	Before	Serpentine Belts	**WARNING**  Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Failure to comply may result in serious injury or death to personnel. 1. Check serpentine belts (Figure 33, Item 1 and 2) for frays, cracks, loose fibers, and visible signs of wear. 2. Press serpentine belts (Figure 33, Item 1 and 2) to check tightness. Serpentine belts should turn no more than 1/4–turn loose or have more than 1/2 in. (12.7 mm) play when pressed.	Serpentine belts are frayed, cracked, or worn.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 494393 Figure 33. Serpentine Belts.	
26	Before	Windshield Washer Fluid	**WARNING**  Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Failure to comply may result in serious injury or death to personnel. 1. Inspect windshield washer fluid reservoir (Figure 34, Item 2) and cap (Figure 34, Item 1) for leaks, damage, and secure mounting. Refer to AR 385-10. 2. Inspect windshield washer fluid reservoir hoses (Figure 34, Item 4) and connections (Figure 34, Item 5) for looseness, leaks, and damage. 3. Check windshield washer fluid reservoir fluid level as follows: a. Visually confirm windshield washer fluid reservoir fluid level is up to the FILL LINE mark (Figure 34, Item 3).	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 34. Windshield Washer Fluid Reservoir.	
			b. If low, add fluid. Refer to WP 0101, Windshield Washer Service.	
27	Before	Cabin Interior	**NOTE** Cabin interior refers to cab and passenger compartments. 1. Inspect cabin interior for any loose or missing bolts. 2. Inspect for missing, damaged, loose, leaking, dirty, or corroded components that would impair operation. 3. Check visible compartment floors for cracks or twists. 4. Check roof insulation panels for missing or damaged insulation. 5. Inspect for organic or inorganic soiling, and clean as necessary. Refer to WP 0089, Vehicle Cleaning.	Any damage that prevents operation.
28	Before	Interior Transparent Armor	**CAUTION** Do not use ammonia or any cleaning product that contains ammonia to clean transparent armor. Ammonia breaks down the bond between the inner and outer layers of transparent armor. Do not use aerosol window cleaners. Aerosol propellent may cause transparent armor separation. Failure to comply may result in damage to equipment. 1. Inspect transparent armor for damage that would impair operator's vision.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect surface of transparent armor for complete breaks, damage, scratches, gouges, delamination, tape, decals, adhesives, or limited visibility that would impair operator's vision. Refer to AR 385-10.	The bond between armor and frame is separated from armor or frame. Any complete break on surface of armor. Any major damage to the surface of the armor.
29	Before	Blackout Curtain	1. Inspect blackout curtain (Figure 35, Item 1) for cuts or missing snaps. For proper installation, refer to WP 0038, Operation Under Usual Conditions - Blackout (B.O.) Operations.	

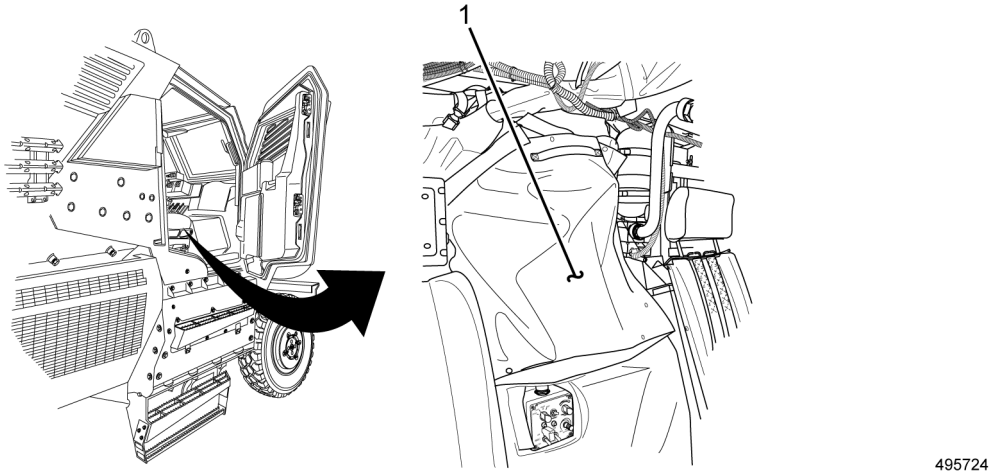


Figure 35. Blackout Curtain.

30	Before	Driver and Commander Seats	**NOTE** Driver seat shown; commander seat similar. 1. Inspect all mounting hardware is present and securely fastened. 2. Make sure seat pads (Figure 36, Item 1) are not torn or damaged. 3. Check seat adjustment lever (Figure 36, Item 2) is firmly engaged to avoid forward or rearward movement when starting or stopping. Refer to WP 0006, Operation Under Usual Conditions - Driver Seat Adjustment.	Mounting hardware is missing or damaged. Seat cannot be secured correctly.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

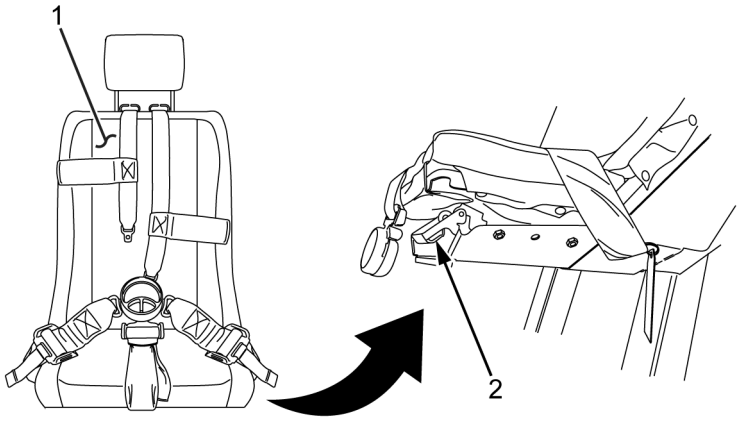


Figure 36. Seat Adjustment Lever.

			4. Push headrest adjustment lever (Figure 37, Item 1) to check headrest raises and lowers. Release to lock headrest at desired height.	

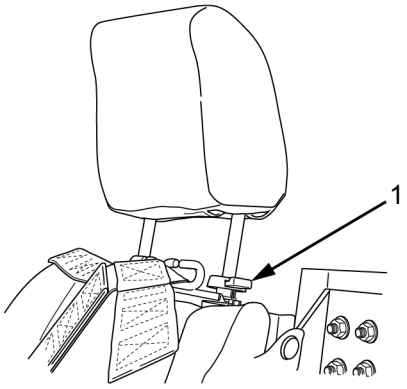


Figure 37. Headrest Adjustment Lever.

31	Before	Medic Seat	1. Inspect for missing, loose, or damaged mounting hardware.	Mounting hardware is missing or damaged.
			2. Make sure seat pads (Figure 38, Item 1) are not torn or damaged.	
			3. Check seat back release operation by rotating handle (Figure 38, Item 2) clockwise or counterclockwise to release back of seat (Figure 38, Item 1). Refer to WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment.	Medic Seat cannot be secured correctly.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			4. Check seat height adjustment knobs (Figure 38, Item 3) are firmly engaged to avoid movement during use. Refer to WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment.	Medic Seat cannot be secured correctly.
			5. Check folding seat bottom lock (Figure 38, Item 4) is firmly engaged to avoid movement during use. Refer to WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment.	Medic Seat cannot be secured correctly.

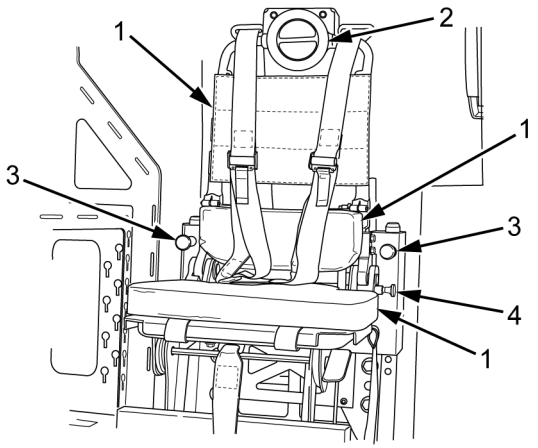
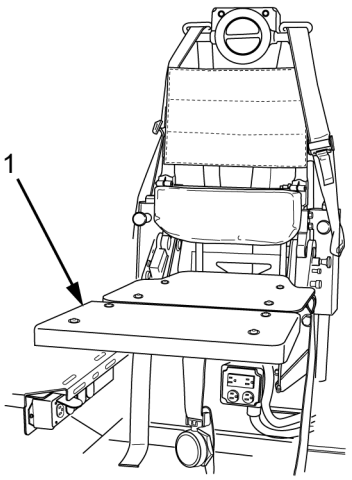


Figure 38. Medic Seat Adjustment.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
32	Before	Gunner Platform	1. Inspect all mounting hardware is present and securely fastened.	Mounting hardware is missing or damaged.
			2. Verify gunner platform extension (Figure 39, Item 1) locks firmly into all positions. Refer to WP 0026, Operation Under Usual Conditions - Gunner Platform.	Platform cannot be secured correctly.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
Figure 39. Gunner Platform.				
33	Before	Rear Passenger Seats	**NOTE** Lower seat bottom can be raised to inspect mounting hardware. Driver side shown; commander side similar. 1. Inspect for missing, loose, or damaged mounting hardware. 2. Make sure seat pads (Figure 40, Item 3, 4, and 5) are not torn or damaged. 3. Check seat back release operation by pulling seat back release strap (Figure 40, Item 1) to release seat back. Firmly push seat back up to lock into up position. Refer to WP 0007, Operation Under Usual Conditions - Passenger Seat Adjustment. 4. Pull release strap (Figure 40, Item 1) to unlock seat back (Figure 40, Item 5) for lowering. Pull knob (Figure 40, Item 2) and lock back of seat (Figure 40, Item 5) in the lowered position by releasing knob. Check that knob (Figure 40, Item 2) is firmly engaged.	Mounting hardware missing or damaged. Passenger seat cannot be secured correctly. Passenger seat cannot be secured correctly.

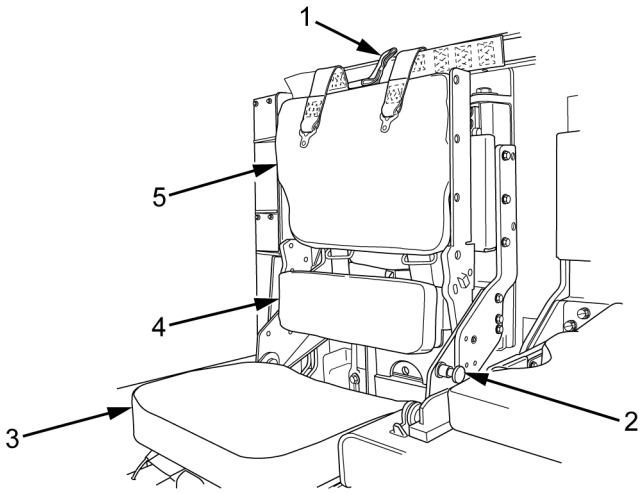
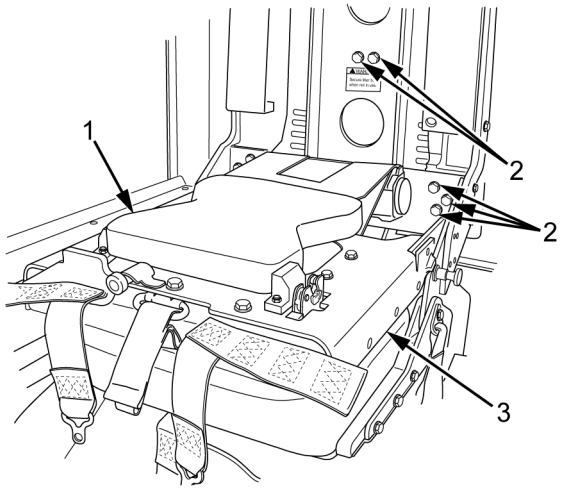


Figure 40. Rear Passenger Seat Lever.

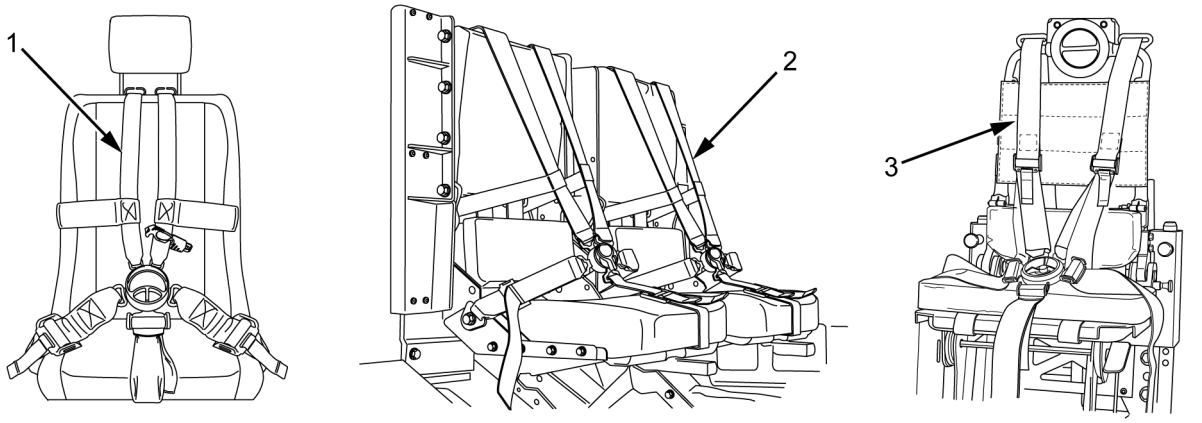
ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			5. When seat back (Figure 41, Item 3) is in down position, inspect or loose, missing or damaged hardware (Figure 41, Item 2). Lift seat pad (Figure 41, Item 1) to check for loose, missing, or damaged hardware.	Hardware loose, missing, or damaged.



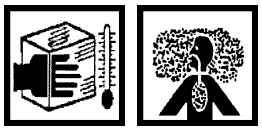
545021

Figure 41. Seat Back in Down Position.

34	Before	Seat Belts (Drivers, Commander, Medic, and Passenger)	1. Inspect driver and commander seat belts (Figure 42, Item 1), passenger seat belts (Figure 42, Item 2), and medic seat belts (Figure 42, Item 3) for damage, frays, or broken buckles. 2. Inspect seat belts (Figure 42, Item 1, 2, and 3) for proper operation. Refer to WP 0009, Operation Under Usual Conditions - Seat Belt Operation.	Seat belts are damaged, or frayed. Seat belt buckles broken, damaged, or missing. Seat belt damaged or not functional.



495232

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Figure 42. Seat Belts.	
35	Before	Interior AFES Extinguishers and Nozzles	**WARNING**  Automatic Fire Extinguishing System (AFES) extinguisher can move violently when discharging. Ensure extinguisher is properly secured during use. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. **NOTE** The vehicle has three interior AFES extinguishers. Rear forward extinguisher pressure gauge shown; others similar. 1. Confirm that all AFES extinguishers (Figure 43, Item 1) and (Figure 44, Item 1) are mounted on vehicle. 2. Check all bolts, nuts, and other fasteners on AFES brackets for tightness. 3. Verify each extinguisher pressure gauge (Figure 43, Item 3) meets minimum requirements for ambient temperature and pressure, according to gauge and label (Figure 43, Item 2) on bottle. 4. Inspect nozzles, hoses, and fittings for obstructions, looseness, or cracks. Refer to WP 0065, Emergency Operation Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	AFES extinguishers are missing. AFES extinguishers are not securely mounted. Pressure gauge does not meet minimum requirements for ambient temperature and pressure. Nozzles are obstructed, hoses are broken or cracked, fittings are loose.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

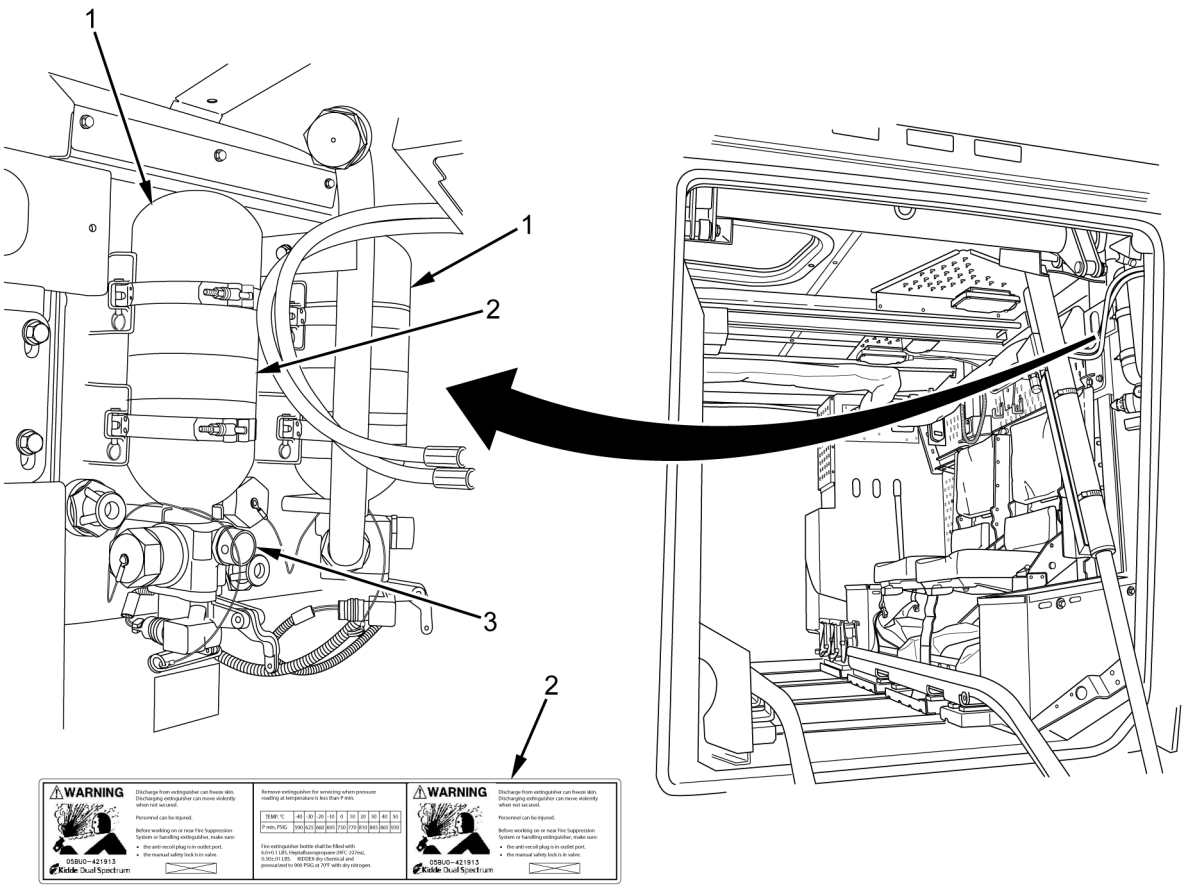


Figure 43. Passenger Compartment AFES Extinguishers.

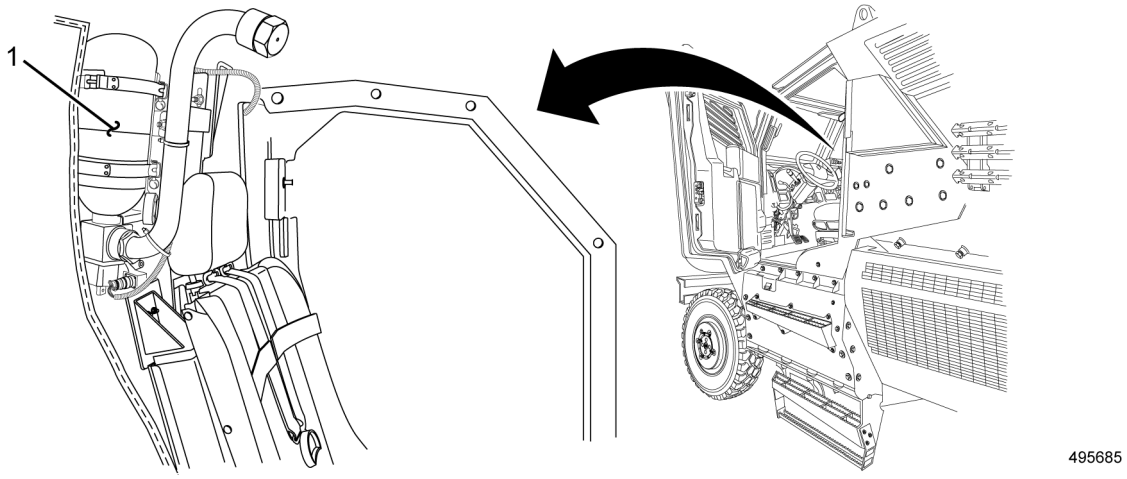


Figure 44. Driver Compartment AFES Extinguisher.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
36	Before	Internal Stowage Compartments	**NOTE** There are four internal stowage compartments in the vehicle; one attached to peg board at rear of vehicle and three between rear door/ramp steps. 1. Check mounting hardware on stowage compartment (Figure 45, Item 1) for cracked or broken hinges and missing or loose bolts or nuts. 2. Check access door on stowage compartment (Figure 45, Item 1) for cracked or broken hinges and missing or loose hinge bolts, pins, nuts, or mounting hardware.	Mounting hardware is missing or has loose bolts or nuts. Mounting hardware is missing or damaged.

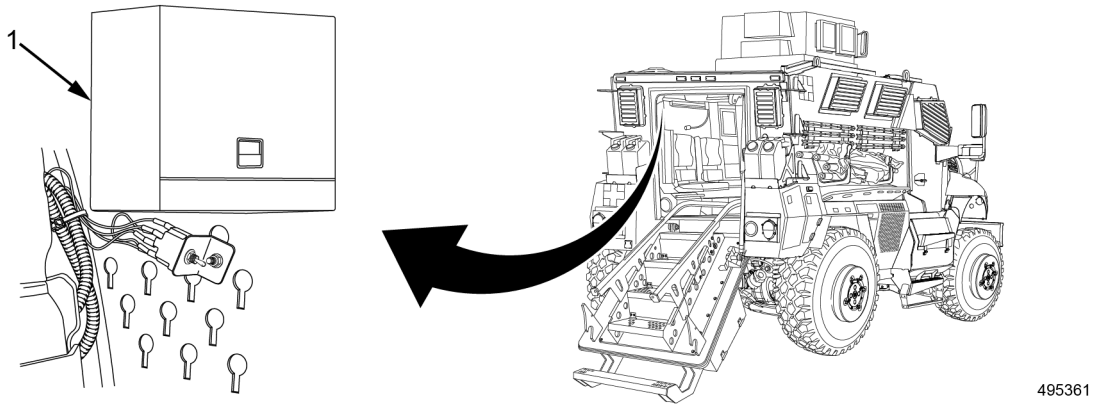
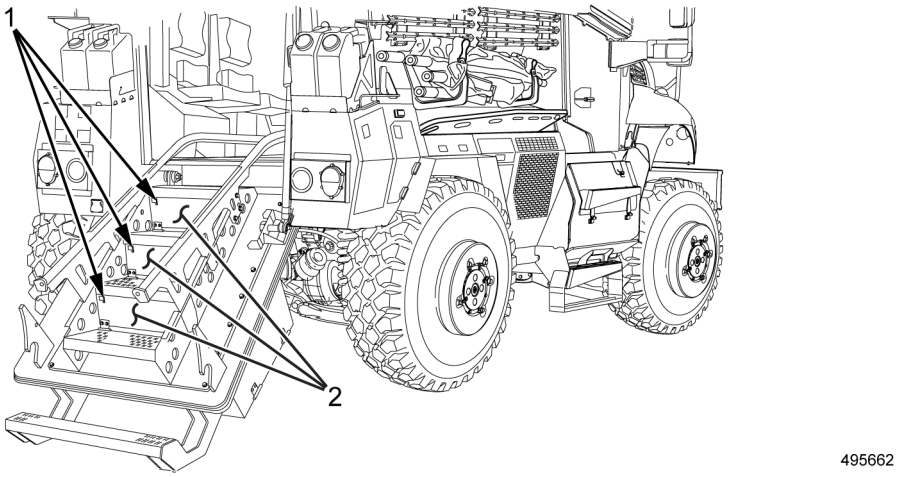


Figure 45. Hydraulic Pump Cover Stowage Compartment.

			3. Check that latches (Figure 46, Item 1) and access doors (Figure 46, Item 2) are operational. Refer to WP 0073, Stowage and Decal/Data Plate Guide.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 46. Rear Door/Ramp Internal Stowage Compartment.	
37	Before	Sliding Hatch (Roof) and Seal	1. Inspect sliding hatch locks in closed, half, and full open positions. Refer to WP 0023, Operations Under Usual Condition - Sliding Hatch (Roof). 2. Inspect sliding hatch seal for tears, missing, or damage.	Sliding hatch does not operate properly or latch does not engage.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
38	Before	Storage Bags	**NOTE** There are five storage bags inside passenger compartment, and seven storage bags inside turret. 1. Inspect storage bags (Figure 47, Item 1), (Figure 48, Item 1), and (Figure 49, Item 1) zippers and buckles to ensure they open and close properly. 2. Check stowage bags for secure stowage.	

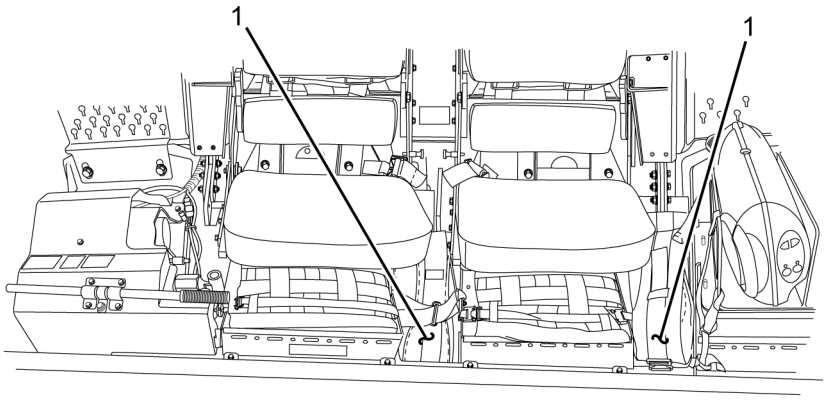


Figure 47. Driver Side Cabin Storage Bags.

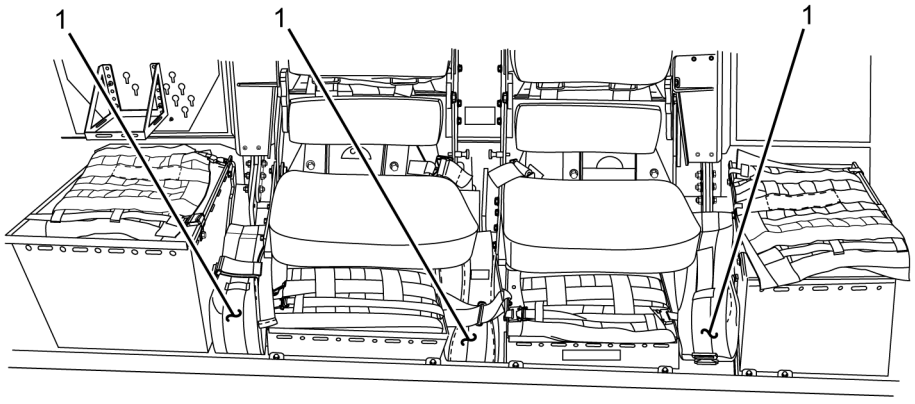
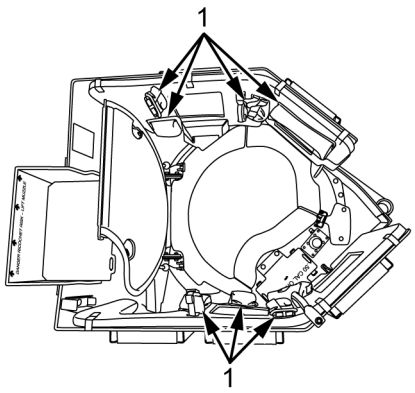
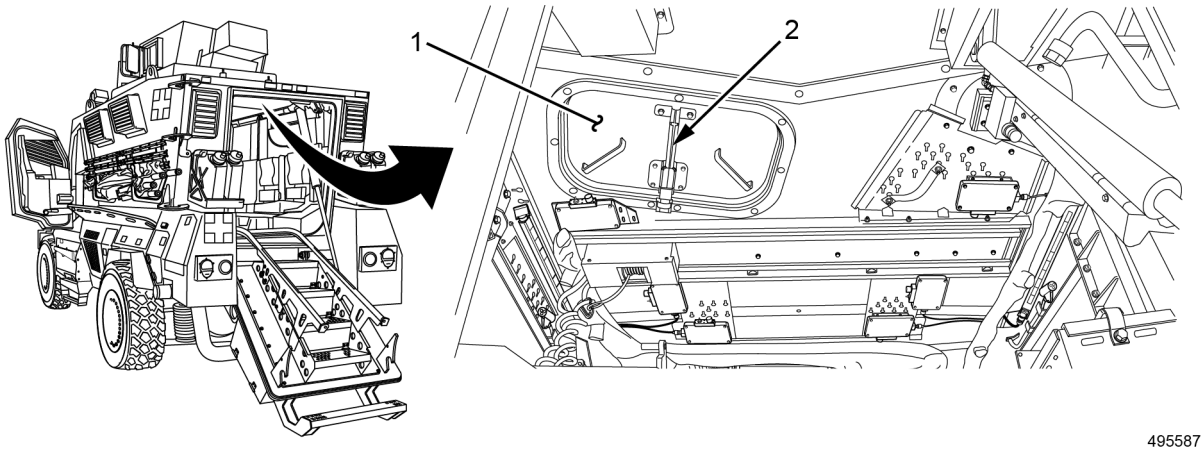
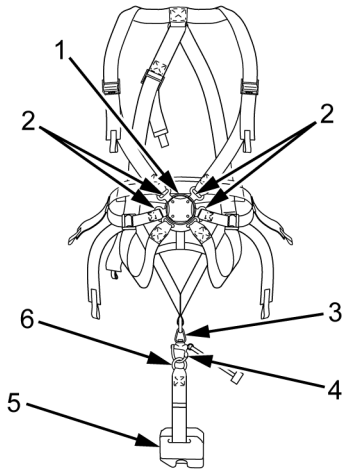
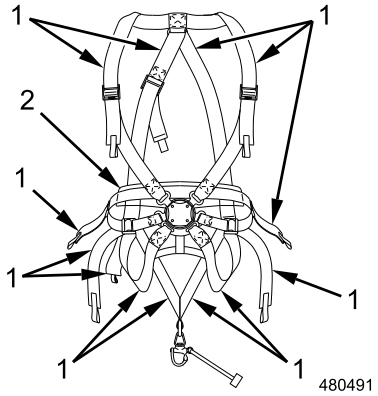


Figure 48. Commander Side Cabin Storage Bags.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 49. Turret Storage Bags.	
39	Before	Emergency Hatch Handle	1. Check that emergency hatch handle (Figure 50, Item 2) functions and latches properly. Refer to WP 0062, Emergency Operations - Emergency Hatch (Roof). 2. Check that emergency hatch (Figure 50, Item 1) opens and closes properly. Refer to WP 0062, Emergency Operations - Emergency Hatch (Roof).	Emergency hatch handle does not function or latch properly. Emergency hatch does not function properly.
			 Figure 50. Emergency Hatch (Roof).	
40	Before	Improved Gunner Restraint System (IGRS)	1. Check all metal parts (Figure 51, Item 1, 2, 3, 4, 5, and 6) for wear, corrosion, and/or proper operation. Refer to WP 0024, Operation Under Unusual Conditions - Improved Gunner Restraint System (IGRS) Operation.	Metal parts are worn, corroded, or not operational.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Figure 51. IGRS Buckle and Latches.	
			2. Check back pad (Figure 52, Item 2) and all webbing (Figure 52, Item 1) and stitching for cuts, tears, and/or fraying.	Webbing or stitching cut, torn, or frayed.
				
			Figure 52. IGRS Back Pad and Webbing.	
			3. Check D-ring (Figure 53, Item 1) for visual deformation and corrosion.	D-ring deformed, not parallel, or corroded.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

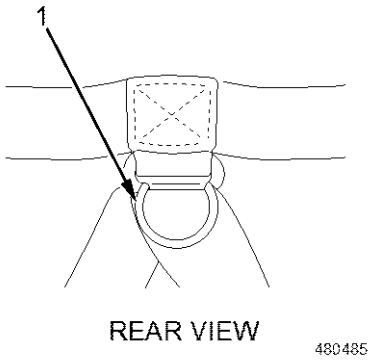


Figure 53. IGRS D-ring.

			4. Check that buckle (Figure 54, Item 1) closes and opens completely by attaching four strap latches (Figure 54, Item 2) to buckle and turning buckle to release strap latches.	Buckle does not close or open completely.

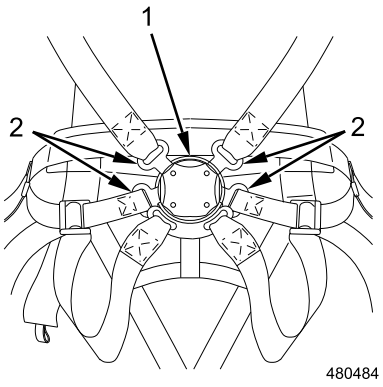
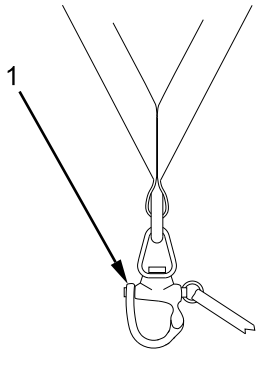
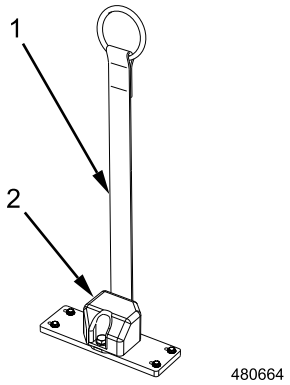


Figure 54. IGRS Buckle.

			5. Check pelican clip (Figure 55, Item 1) for proper operation. Refer to WP 0024, Operation Under Unusual Conditions - Improved Gunners Restraint System (IGRS) Operation.	Anchor strap pelican clip does not move freely, pass completely through bail hole when closing, or rotate freely.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 55. IGRS Anchor Strap Pelican Clip.	
			6. Check that strap (Figure 56, Item 1) fully extends from floor retractor (Figure 56, Item 2) and retracts back into floor retractor.	Strap does not fully extend or retract.
			7. Check locking mechanism in floor retractor (Figure 56, Item 2) by extending strap (Figure 56, Item 1) approximately 45 in. (114 cm) and jerking on strap until mechanism engages.	Locking mechanism in floor retractor does not engage.
			8. Check floor retractor (Figure 56, Item 2) for loose, missing, or damaged hardware.	Hardware missing, loose, or damaged.
			 Figure 56. IGRS Strap and Floor Retractor.	
41	Before	Blast Energy Attenuating Turret Seat (BEATS)	1. Check pelican clip (Figure 57, Item 2) is present, securely fastened, and functions properly. Refer to WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Turret Seat (BEATS) Operation.	Mounting hardware is missing or damaged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect straps (Figure 57, Item 5) for wear and damage or missing associated hardware.	Any component is missing or damaged.
			3. Check backrest (Figure 57, Item 1) and pad (Figure 57, Item 6) are not torn or damaged.	
			4. Check proper operation of strap adjusters (Figure 57, Item 4). Refer to WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Turret Seat (BEATS) Operation.	Strap adjusters do not operate properly.
			5. Check proper operation of emergency pull tabs (Figure 57, Item 3). Refer to WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Turret Seat (BEATS) Operation.	Emergency pull tabs do not operate properly.

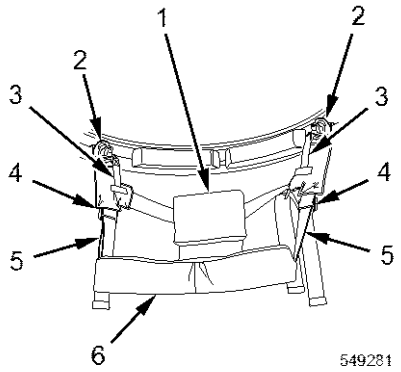


Figure 57. BEATS.

42	Before	Objective Gunners Protection Kit (OGPK)	**WARNING** Gunner hatch is extremely heavy. Use caution when opening and closing. Keep arms and hands clear of gunner hatch when closing. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. Be careful of falling or flying dust and debris while in the turret area. Wear safety goggles. Failure to comply may result in serious injury to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			NOTE Turret hatch pad must be removed prior to performing checks. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation. Battery charge cable must be disconnected prior to performing these checks. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	
			1. Check that gunner hatch (Figure 58, Item 1) operates smoothly and hatch latch engages and secures hatch in open position. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	Gunner hatch does not operate properly or latch does not engage.
			2. Inspect turret ring (Figure 58, Item 2) for evidence of any sagging that would cause rubbing or binding with OGPK.	Turret does not rotate freely.

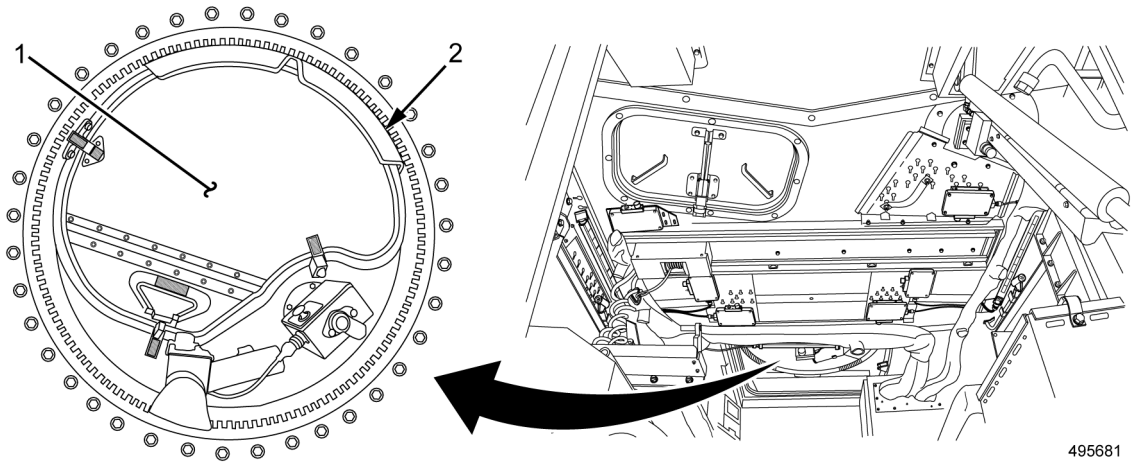
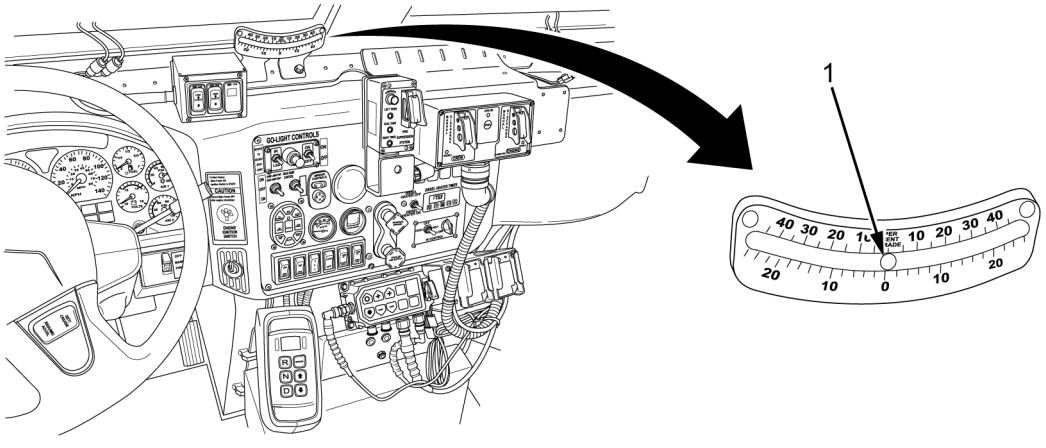
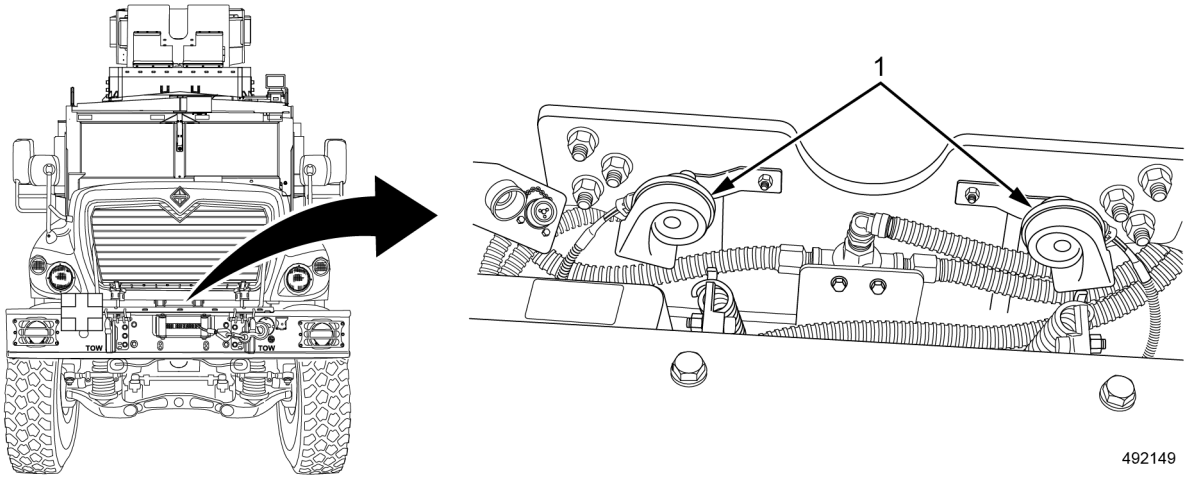


Figure 58. Gunner Hatch and Turret Ring.

			3. Inspect turret ring for broken, loose, or missing hardware.	Broken, loose, or missing hardware.
			4. Pull RED ITDS controller knob ON. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			5. Check battery charge level by operating the Improved Turret Drive System (ITDS) CHECK BATTERY push button. Refer to WP 0004, Description and Use of Operator Controls and Indicators.	
			6. Check proper operation of turret motor using joystick. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	Turret sticks, binds or does not rotate freely.
			7. Check operation of manual crank. Refer to WP 0073, Stowage and Decal/Data Plate Guide for OGPK stowage locations for manual crank. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	Manual crank sticks or binds.
			8. Inspect gunners padding for rips/tears and broken or missing pins. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	
43	Before	Inclinometer	**WARNING** Inclinometers measure vehicle side angles of slope/tilt. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. **NOTE** Ensure vehicle is parked on a level surface with wheels chocked and parking brake set. 1. Check inclinometer mounting hardware for cracked, broken, missing, or loose bolts or nuts.	Inclinometer mounting hardware is cracked, broken, missing, or loose bolts or nuts.
			2. Verify indicator ball (Figure 59, Item 1) position is located in center at 0°/0%. If vehicle is parked on level surface and indicator ball is not centered, notify Field Level Maintenance. Refer to AR 385-10.	Inclinometer ball is not located in center at 0°/0%.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 59. Inclinometer.	
44	Before	Lights and Horns	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch ON, ignition switch to RUN, and wheels chocked. Non-working lights may violate AR 385-10. 1. Check all lights that illuminate using Master Vehicle Light Switch (MVLS) for proper operation. Check emergency flashers. Refer to WP 0004, Description and Use of Operator Controls and Indicators and AR 385-10. Ensure that all lights are clean. 2. Check operation of horn by turning MASTER POWER switch ON, turning lights on, and pressing the horn symbol on steering wheel pad. Refer to AR 385-10. Inspect two horns (Figure 60, Item 1) for missing, unplugged connector, or damage.	Front and rear service lights do not function. Horn does not function when lights are on.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 60. Horns.	
45	Before	Spotlight	**CAUTION** Non-working lights may violate AR 385-10. **NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch ON, ignition switch to RUN, and wheels chocked. 1. Check spotlight. Refer to WP 0004, Description and Use of Operator Controls and Indicators.	
46	Before	Power and Heated Mirrors	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch ON, ignition switch to RUN, and wheels chocked. 1. Check power mirrors and heated mirrors for proper operation. Refer to WP 0004, Description and Use of Operator Controls and Indicators and AR 385-10. 2. Inspect for broken, cracked or loose mirrors. Check that visibility is not impaired due to dirty mirrors. Check that mirrors move freely. Refer to AR 385-10.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
47	Before	Fire Suppression System (FSS) Controls	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch ON, ignition switch to RUN, and wheels chocked. FSS Light Emitting Diodes (LEDs) may be on but appear off if dimmer switch is turned down. 1. Check that all LEDs (Figure 61, Item 4, 5, and 6) are on steady GREEN. Adjust dimmer switch (Figure 61, Item 1) to brighten LEDs as necessary. 2. Check that LEFT TIRES LED (Figure 61, Item 6), RIGHT TIRES LED (Figure 61, Item 4), or FUEL TANK LED (Figure 61, Item 5) is not blinking. If LED is blinking, notify Field Level Maintenance. 3. Check that toggle switch guard (Figure 61, Item 2) is secured with safety wire (Figure 61, Item 3). If safety wire is missing, notify Field Level Maintenance.	Any system LED is OFF. Any system LED is blinking.

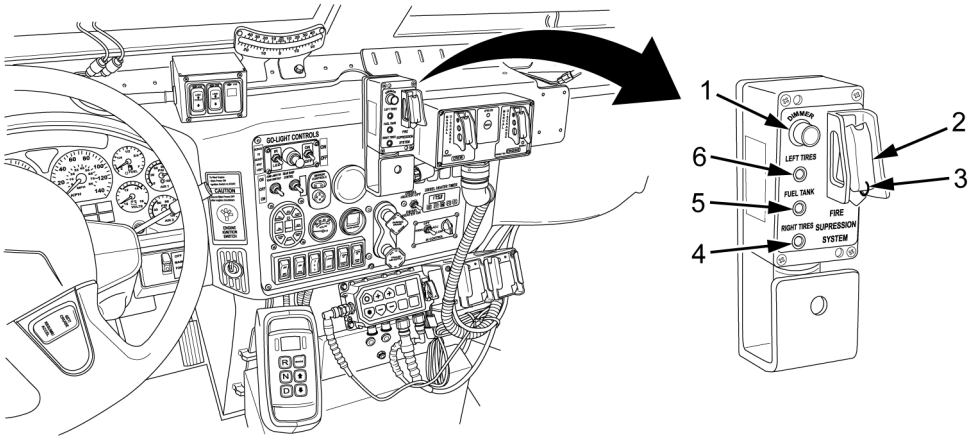


Figure 61. FSS Control Panel.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
48	Before	AFES Controls	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch ON, ignition switch to RUN, and wheels chocked. TROUBLE LEDs temporarily come on when vehicle is started. 1. Check that AFES ON LED (Figure 62, Item 2) remains ON. If LED does not stay ON, refer to WP 0082, Automatic Fire Extinguishing System (AFES)/Fire Suppression system (FSS) Troubleshooting. 2. Check that CREW TROUBLE LED (Figure 62, Item 5) or ENGINE TROUBLE LED (Figure 62, Item 4) is not remaining on or blinking. If LED goes out or is blinking, refer to WP 0082, Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS). 3. Check that toggle switch guards (Figure 62, Item 1) are secured with safety wire (Figure 62, Item 3). Refer to AR 385-10, para 11–3. If safety wire is missing, notify Field Level Maintenance.	AFES ON LED is blinking or off. Any TROUBLE LED remains on or blinking.

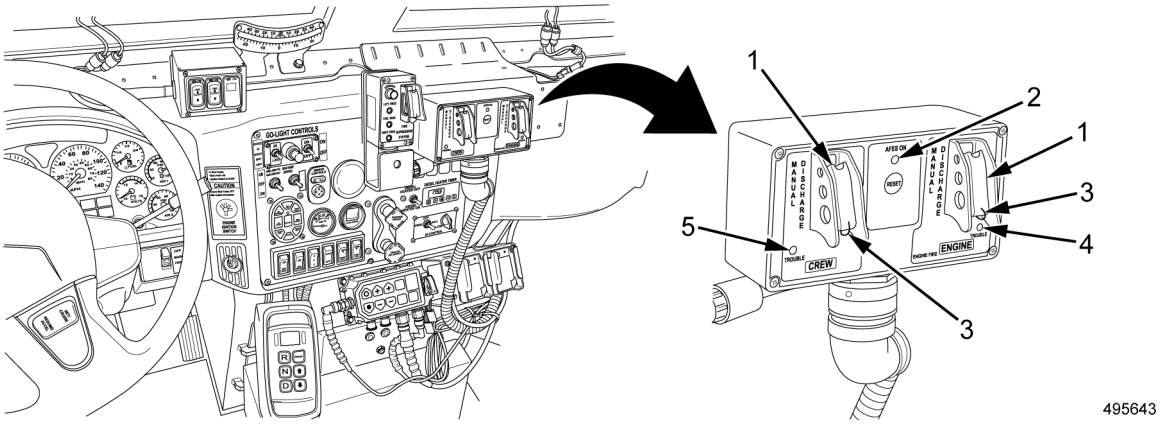
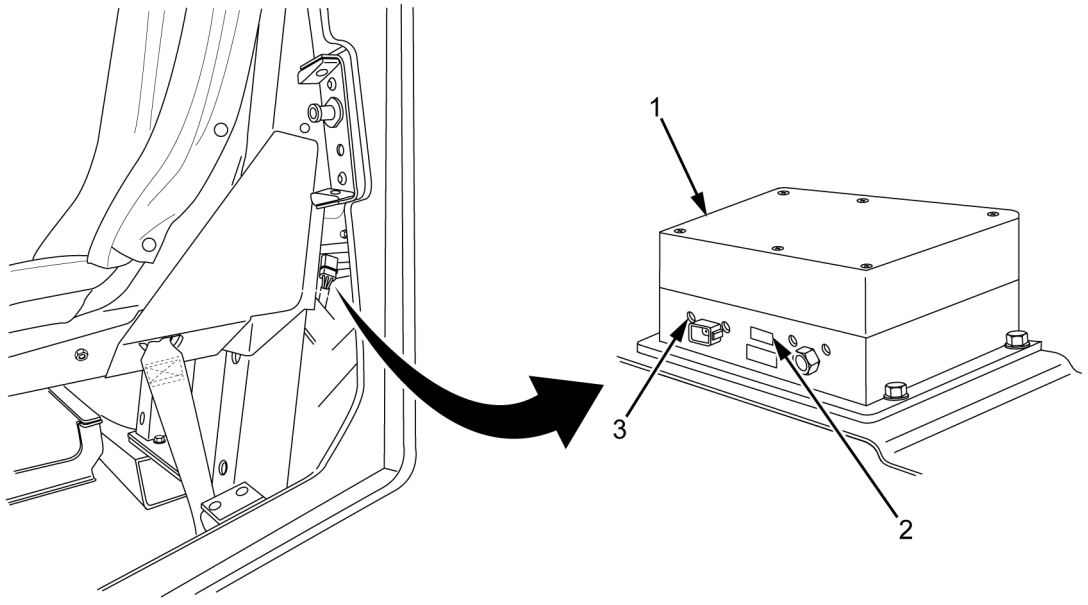
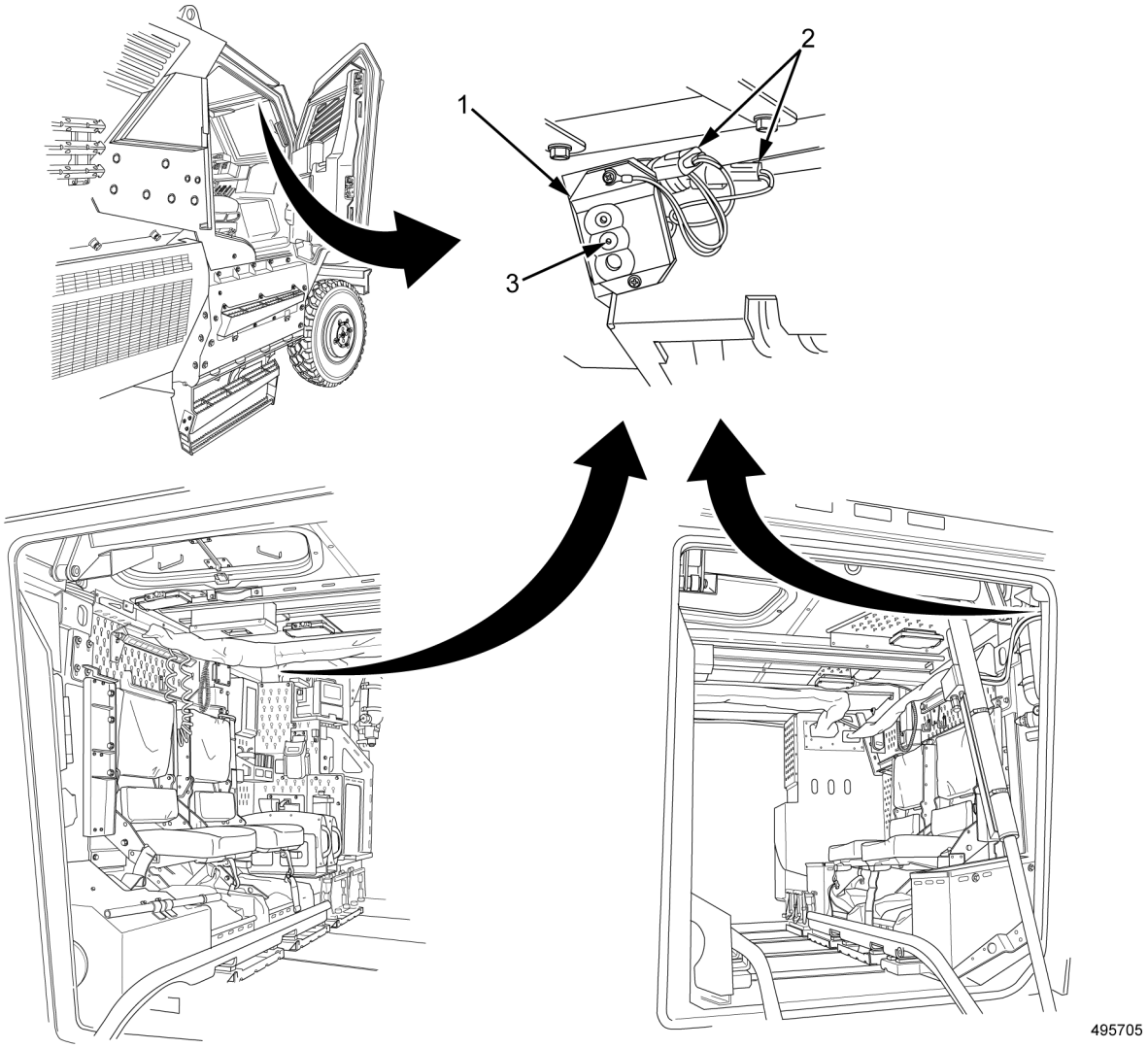


Figure 62. AFES Control Panel.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
49	Before	AFES Battery Backup Unit (BBU)	**WARNING** Operating vehicle without the BBU fully charged may result in the AFES not operating in the event of a power failure. If BBU does not charge, contact Field Level Maintenance. Failure to comply may result in serious injury to personnel. **NOTE** The BBU is located behind the driver seat and has a 3 year life. Operating vehicle with an expired battery is not recommended. 1. Confirm that BBU (Figure 63, Item 1) is present and connected. If disconnected, reconnect. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable. 2. Verify BBU LED (Figure 63, Item 3) is GREEN. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable. 3. Verify battery expiration label (Figure 63, Item 2) has not expired. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.	AFES BBU is missing or damaged. LED is RED or off.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
Figure 63. AFES BBU.				
50	Before	AFES Sensors	**NOTE** There are two engine AFES sensors and three cabin AFES sensors to inspect. 1. Inspect cabin AFES sensors (Figure 64, Item 1) for GREEN LEDs (Figure 64, Item 3) that are off, and missing, broken, or disconnected wire connectors (Figure 64, Item 2). Refer to WP 0065, Emergency Operation - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	LEDs are off. Wire connectors are missing or broken.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Figure 64. Cabin AFES Sensors.	
			2. Inspect engine AFES sensors (Figure 65, Item 2) for GREEN LEDs (Figure 65, Item 1) that are off or missing, broken, or disconnected wires (Figure 65, Item 3). Refer to WP 0065, Emergency Operation - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	LEDs are off. Wire connectors are missing or broken.

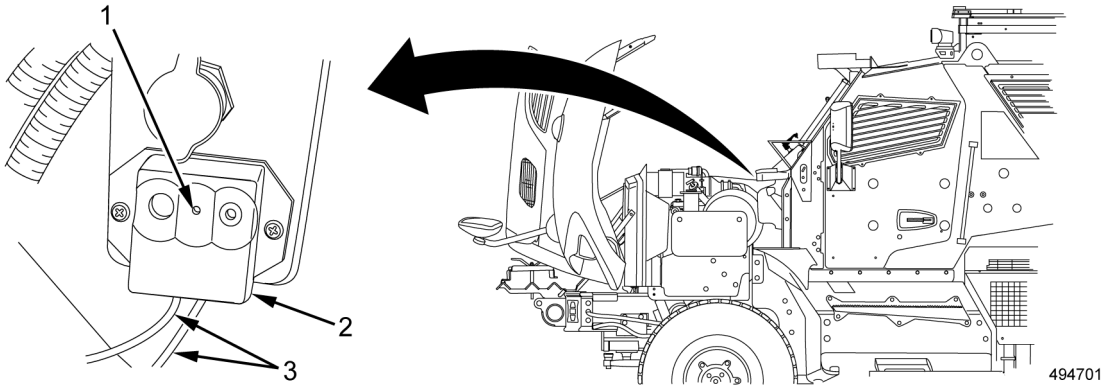
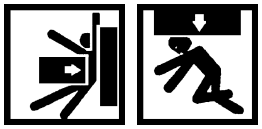


Figure 65. Engine AFES Sensors.

51	Before	Rear Door/ Ramp	**WARNING**  Ensure no one is behind vehicle when lowering rear door/ramp. Use extreme caution when using emergency rear door/ramp release to ensure that no one is struck by door as it falls open. Sound horn before lowering rear door/ramp. Do not operate rear door/ramp while vehicle is in motion. Failure to comply may result in serious injury or death to personnel. 1. Operate rear door/ramp. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation.	Rear door/ramp will not operate or malfunctions.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Check rear door/ramp hinges (Figure 66, Item 1) and mounting hardware (Figure 66, Item 2) for cracked or broken hinges and missing or loose hinge bolts or nuts.	Ramp hinges are cracked or broken; mounting hardware is missing or has loose bolts or nuts.

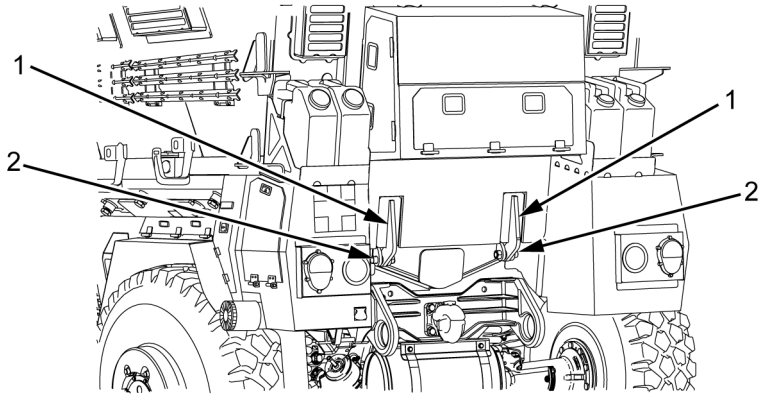
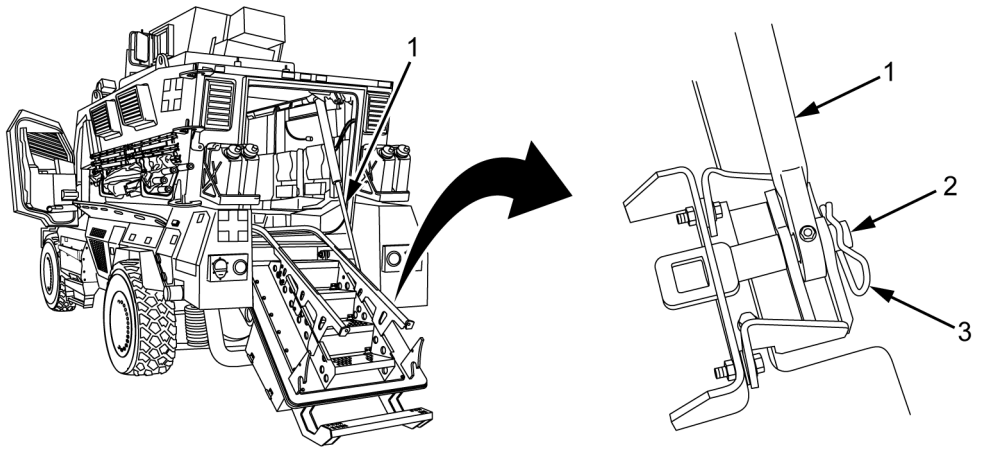


Figure 66. Rear Door/Ramp Hinges.

			3. Check area under rear door/ramp pump for leaks.	Any hydraulic fluid Class III leak.
			4. Check lock pin (Figure 67, Item 3) and bridge pin (Figure 67, Item 2) on hydraulic cylinder (Figure 67, Item 1) for cracked, broken, or missing lock pin, or missing bridge pin.	Any lock pin is cracked, broken, or missing. Any bridge pin is missing.
			5. Check rear door/ramp seal for cuts, tears, or missing door seal.	



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

Figure 67. Rear Door/Ramp.

			6. Check two hydraulic lines (Figure 68, Item 2) from hydraulic transfer block (Figure 68, Item 4) and hydraulic cylinder (Figure 68, Item 3) to hydraulic unit (Figure 68, Item 1).	

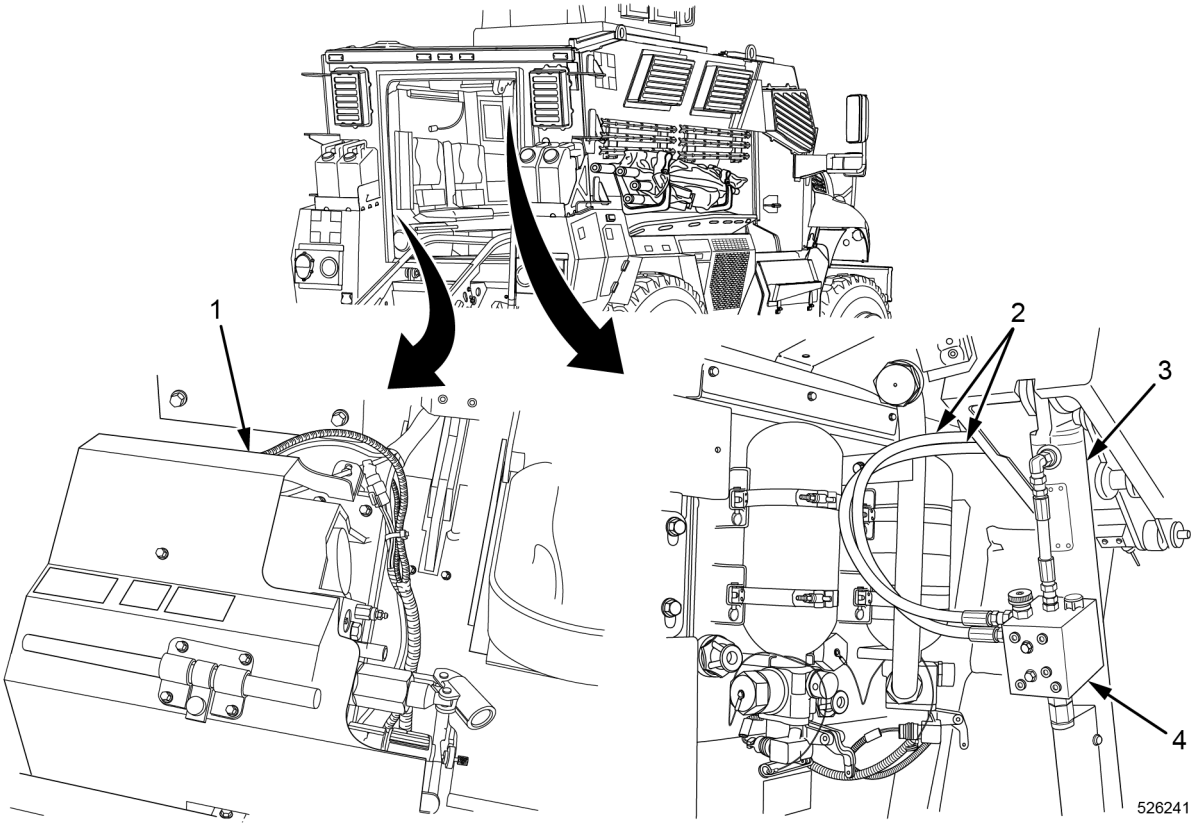
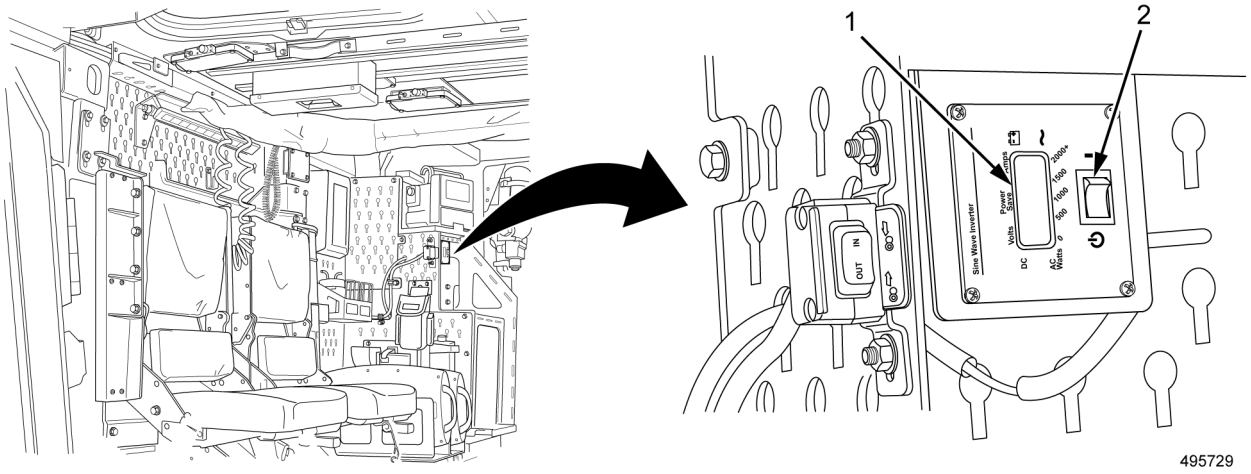
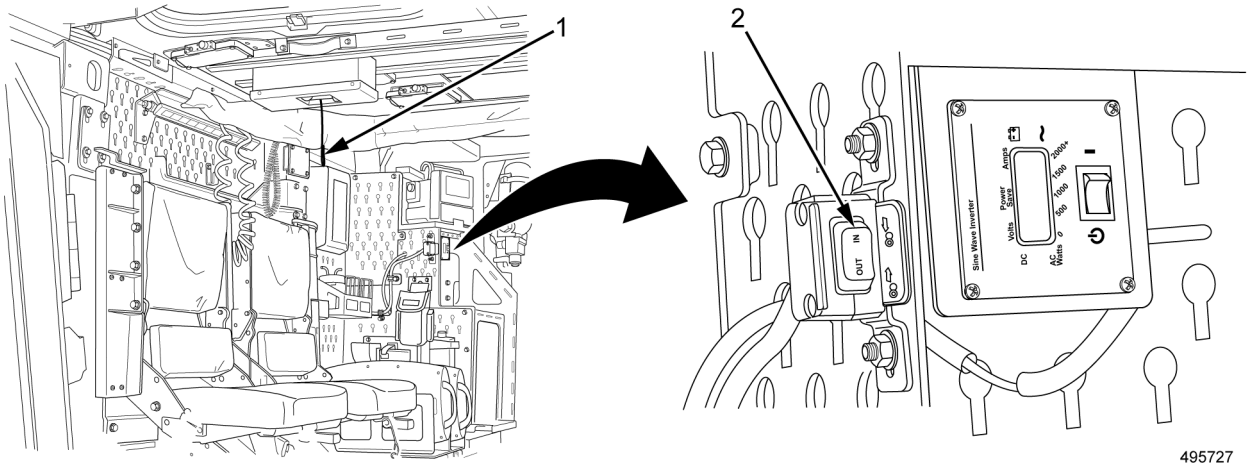
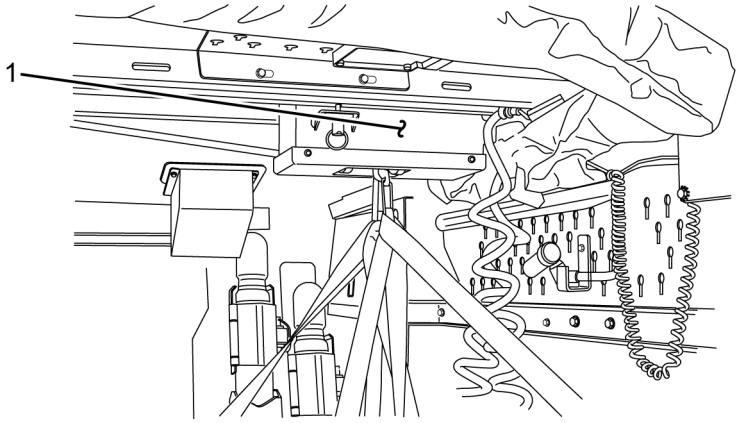
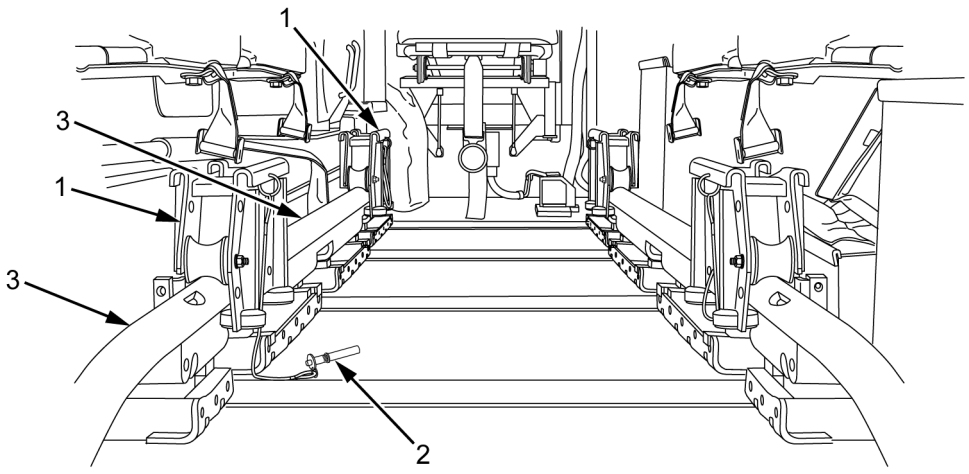


Figure 68. Rear Door/Ramp.

52	Before	Passenger Remote Inverter Switch and Gauge	**NOTE** Inverter switch may beep and flash if insufficient voltage. 1. Turn ON 110V power inverter switch. Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter. 2. Turn ON passenger compartment remote inverter switch (Figure 69, Item 2). Gauge (Figure 69, Item 1) on inverter switch panel should read at a min. 24V.	Remote Inverter Gauge does not illuminate, or switch panel reads less than 24V.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Figure 69. Remote Inverter Switch.	
53	Before	Litter Lift Switch and Lift	**NOTE** The following check should be made with the MAIN POWER switch ON. 1. Verify litter lift cable (Figure 70, Item 1) moves in and out when pressing litter lift switch (Figure 70, Item 2).	
				
			Figure 70. Litter Lift Switch.	
			2. Inspect litter lift (Figure 71, Item 1) can be adjusted to different positions on rail and locked in position. Refer to WP 0039, Operation Under Usual Conditions - Litter Lifting and Securing Operation.	Litter lift does not lock in position.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 495737	
			Figure 71. Litter Lift.	
54	Before	Trolley Slides and Rails	**NOTE** Driver side shown; commander side similar. 1. Inspect rails (Figure 72, Item 3) for any damage. 2. Inspect trolley slide pins (one per trolley) (Figure 72, Item 2) for missing or any damage. 3. Remove trolley slide pins (one per trolley) (Figure 72, Item 2) and verify trolley slides (Figure 72, Item 1) move up and down freely on rails. 4. Install trolley slide pins (one per trolley) (Figure 72, Item 2).	Any damage that prevents operation. Any missing parts or damage that prevents operation. Any trolley slide that does not move freely.
			 495739	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Figure 72. Trolley Slides and Rails.	
55	Before	Heater and Air Conditioning Air flow Bag	1. Inspect air flow bag (Figure 73, Item 1) for rips, tears, missing, or disconnected.	

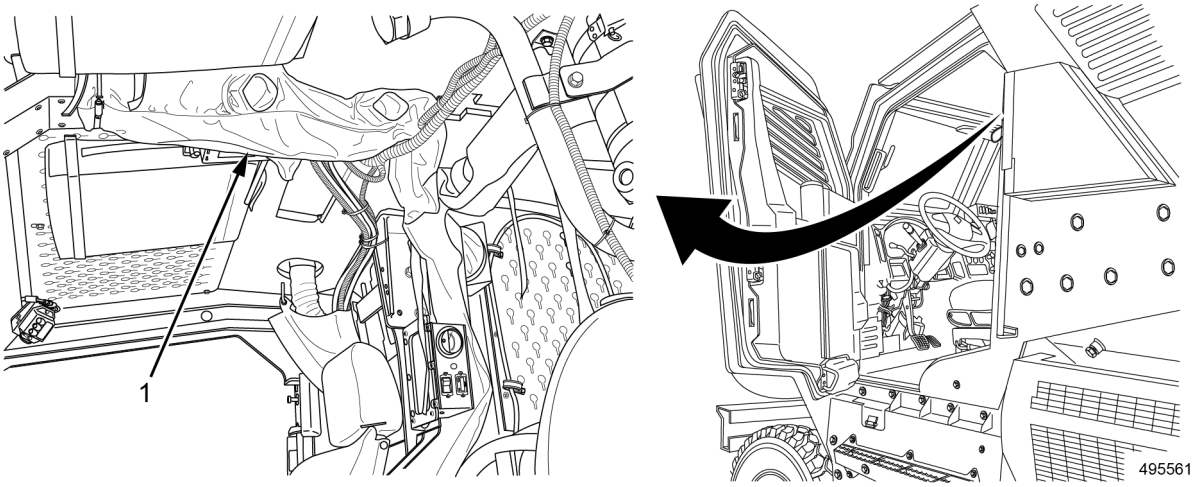


Figure 73. Driver and Commander Heater and Air Conditioning Air Flow Bag.

			2. Inspect air flow bags (Figure 74, Item 1) for rips, tears, missing, or disconnected.	

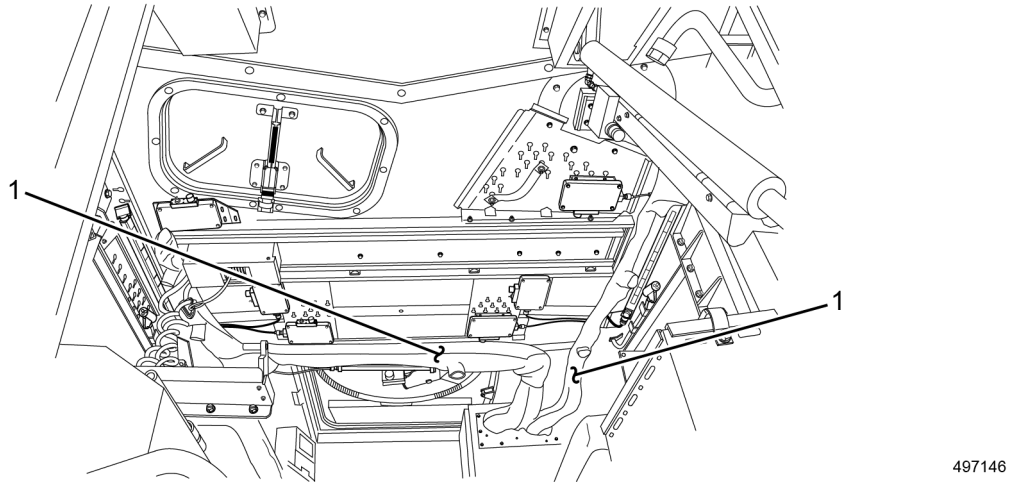


Figure 74. Passenger Heater and Air Conditioning Air Flow Bag.

56	Before	Rear Fuel/Water Can and Stowage Racks	1. Inspect two rear fuel/water can stowage racks (Figure 75, Item 4 and 5) for damage.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect four rear fuel/water cans (Figure 75, Item 2 and 6) for cracks, dents, or other damage. 3. Inspect two rear fuel/water cans hold down straps (Figure 75, Item 1 and 3) for cuts or damage.	

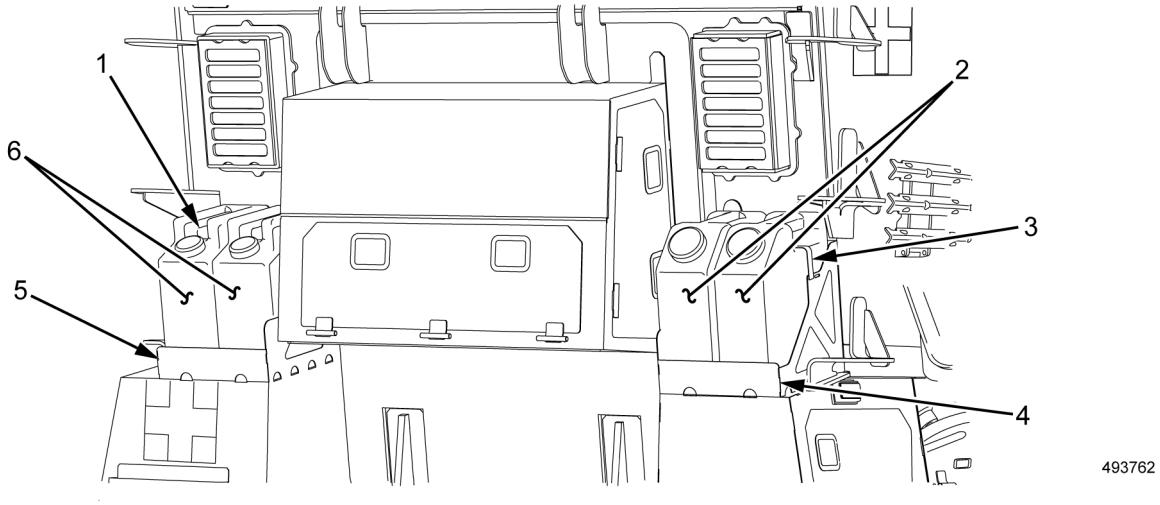
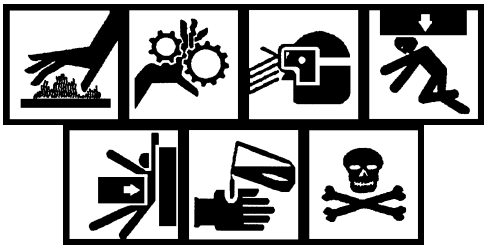


Figure 75. Rear Fuel/Water Can and Stowage Rack Inspection.

57	Before	Transmission Oil Level (Cold Check)	**WARNING**  Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Failure to comply may result in serious injury or death to personnel. Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel. **CAUTION** Ensure vehicle is parked on a level surface with wheels chocked and parking brake set. Failure to comply may result in damage to equipment. Do not overfill transmission oil. Failure to comply may result in damage to equipment. **NOTE** Engine must be running prior to performing these checks. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C). Before performing the cold-check procedure, verify TRANS temperature gauge has reached 60 to 120°F (16 - 49°C), to ensure accurate reading and help prevent transmission damage. 1. Check that transmission oil dipstick (Figure 77, Item 2) is present and not damaged. 2. Check transmission oil level as follows: a. With service brake applied, shift to DRIVE (D) and then to REVERSE (R) to clear hydraulic system of air. b. Shift to NEUTRAL (N) and allow the engine to remain at idle (500 to 800 rpm) for 1 minute.	Dipstick is missing. If overfull or if vehicle has Class III leak.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			c. Turn dipstick handle (Figure 76, Item 1) counterclockwise. d. Remove transmission oil dipstick (Figure 76, Item 1) from fill tube (Figure 76, Item 2). e. Wipe transmission oil dipstick (Figure 77, Item 2) with clean rag.	

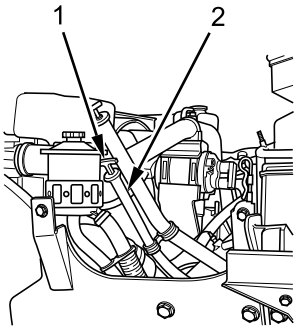
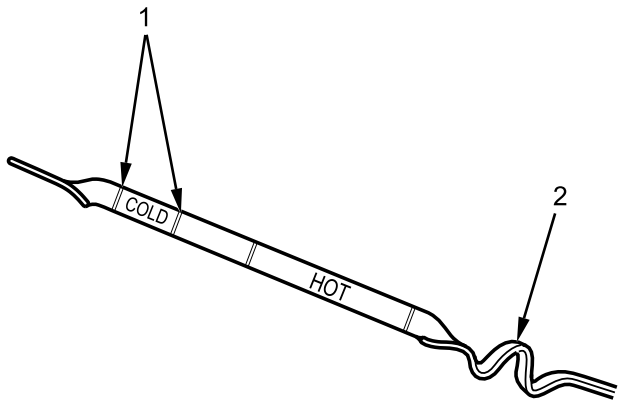


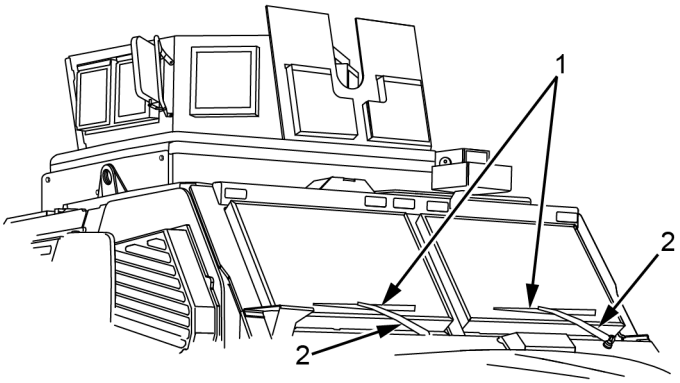
Figure 76. Transmission Fluid Dipstick.

			f. Perform steps c and d. Oil level should be within COLD bands (Figure 77, Item 1) on transmission oil dipstick (Figure 77, Item 2). g. If fluid level is within COLD bands (Figure 77, Item 1) transmission can be operated. h. If oil level is below COLD bands (Figure 77, Item 1), add oil. Refer to WP 0096, Transmission Fluid Service. i. If oil level is above COLD bands (Figure 77, Item 1), shut down engine. Notify Field Level Maintenance to drain oil as necessary to bring fluid level to middle of COLD band.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 213249 Figure 77. Transmission Fluid Dipstick Cold Check Operating Range.	
			j. Insert transmission oil dipstick (Figure 77, Item 2) into fill tube (Figure 76, Item 2). k. Turn transmission oil dipstick handle (Figure 76, Item 1) clockwise until snug.	
58	Before	Brakes	**WARNING** Air system is under pressure. Wear safety goggles and gloves. Do not disconnect any air system fitting. Hoses may whip and injure personnel, and air under pressure can penetrate skin. Failure to comply may result in serious injury or death to personnel. Check air brake system function while vehicle is on a firm level surface clear of personnel, buildings, and equipment. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Let air pressure build in both tanks to 110 to 130 psi (758 to 896 kPa) before releasing the parking brake. Do not operate vehicle with air pressure system loss. Low air pressure may affect vehicle braking capability. Failure to comply may result in injury or death to personnel. **NOTE** Engine must be running prior to performing these checks. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C). 1. Check air brakes as follows: a. Push in YELLOW PARKING BRAKE knob, and listen for valve release. Push in RED TRAILER AIR SUPPLY valve knob if a trailer is coupled with the vehicle, and listen for valve release. b. Observe AIR pressure gauges #1 and #2 to ensure the air compressor or governor cutout pressure remains 120 psi (827 kPa). c. Shut down engine and turn ignition switch back to RUN. d. Without brake pedal applied, observe air pressure drop for 1 minute. Air pressure drop should not drop below 118 psi (814 kPa) for vehicles without trailers, and 117 psi (807 kPa) for vehicles with trailers. e. Depress and hold brake pedal and make sure there is no more than a 3 psi (21 kPa) drop per minute. **NOTE** Service drive lights must be on before audible warning will operate. f. Depress and release service brake pedal to decrease system air pressure and check for RED indicator light and buzzer to come on at about 64 to 76 psi (441 to 524 kPa).	Brakes are malfunctioning, hoses cracked, frayed, or worn. Valves don't release.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			g. Depress and release service brake pedal to decrease system air pressure, and check to make sure RED TRAILER AIR SUPPLY valve knob and YELLOW PARKING BRAKE knob pop out between 20 to 45 psi (138 to 310 kPa). h. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C). i. Allow air pressure to build to normal operating pressure. j. Shift transmission into DRIVE (D), then downshift into a low gear. Gently pull against service and parking brakes separately to make sure they will hold vehicle from moving. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation.	
59	Before	Starter	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, wheels chocked, and engine OFF. 1. Check that starter engages smoothly and engine starts properly.	Engine does not start, excessive or unusual noises coming from starter, or starter does not make any noise.
60	During	Throttle Idle Control	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine running, and wheels chocked. 1. Check throttle idle control for proper operation. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.	Throttle idle control does not operate properly.
61	During	Windshield Wipers	1. Check all windshield wiper and washer system functions using multifunction turn signal lever. Refer to WP 0004, Description and Use of Controls and Indicators. 2. Check for worn rubber on blades (Figure 78, Item 1) and for blades securely mounted on wiper arms (Figure 78, Item 2). Refer to AR 385-10.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
 Figure 78. Windshield Wipers.				
62	During	Heated Windshield and Heated Mirrors	**NOTE** Perform the following inspection only if windshield and mirror heat is required for climatic conditions. 1. Turn heated windshield and heated mirrors on and check for proper operation. Refer to WP 0004, Description and Use of Controls and Indicators. Refer to AR 385-10.	
63	During	Life Support System (LSS)/Heating Ventilation and Air Conditioning (HVAC)	1. Check for missing or damaged components. Refer to WP 0028, Operation Under Usual Conditions - Life Support System (LSS)/Heating Ventilation and Air Conditioning (HVAC) Operations. 2. Check control panel operation and airflow of heating and cooling system. Refer to WP 0028, Operation Under Usual Conditions - Life Support System (LSS)/Heating Ventilation and Air Conditioning (HVAC) Operations.	Components are missing or damaged. LSS/HVAC will not operate or maintain between 60 to 85°F (15.5 - 29.4°C) cabin temperature.
64	During	CTIS	1. Check CTIS display (Figure 79, Item 3) for trouble codes. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation. 2. Check CTIS display (Figure 79, Item 3) for proper operation using terrain switch (Figure 79, Item 1) engaging all four terrains.	Two dashes are displayed.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Check CTIS using load switch (Figure 79, Item 2) to verify LED load bar lights as it travels through load range. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.	System will not maintain air.

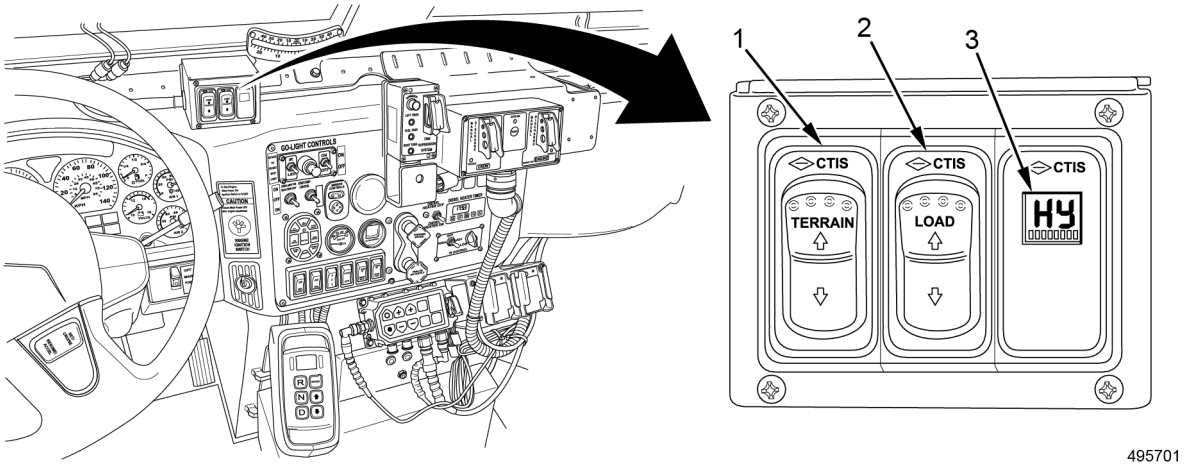


Figure 79. CTIS.

65	During	Instrument Panel (IP) Cluster Gauges	**NOTE** The following checks should be made with the engine running. The VOLTS gauge, 24V system is located on center IP.	
			1. Check for operation of all panel gauges and switches.	Gauge needle does not move or RED indicator light remains lit.
			2. Check if OIL PSI gauge (Figure 80, Item 4) is building to 15 psi (103 kPa). Oil pressure should begin a gradual rise to operating range of 20 to 65 psi (138 - 448 kPa).	Oil pressure below 15 psi (103 kPa).
			3. Check TRANS temperature gauge (Figure 80, Item 5) to see if temperature is within operating range of 160 to 200°F (71 - 93°C).	TRANS temperature gauge reading hotter than maximum operating range.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			4. Check WATER (engine coolant) temperature gauge (Figure 80, Item 1) to see if temperature is within operating range of 190 to 205°F (88 - 96°C).	WATER (engine coolant) temperature gauge reading hotter than maximum operating range.
			5. Check VOLTS gauge, 12V system (Figure 80, Item 3) to see if alternator is charging. Proper operating range is 12.5 to 14.5V.	Gauge is not reading in its operating range.
			6. Check AIR pressure gauges #1 and #2 (Figure 80, Item 2) for normal operation, and check if pressure of 110 to 130 psi (758 - 896 kPa) causes governor to audibly release air.	Unable to build or maintain air pressure.

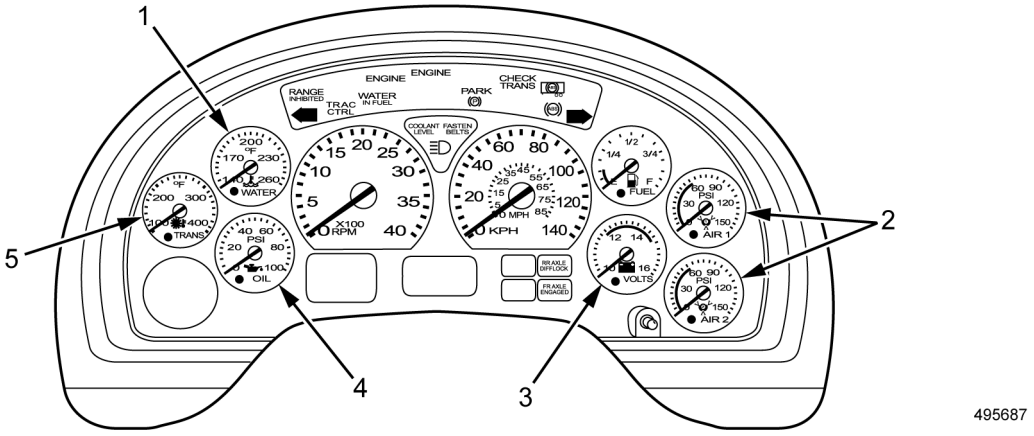
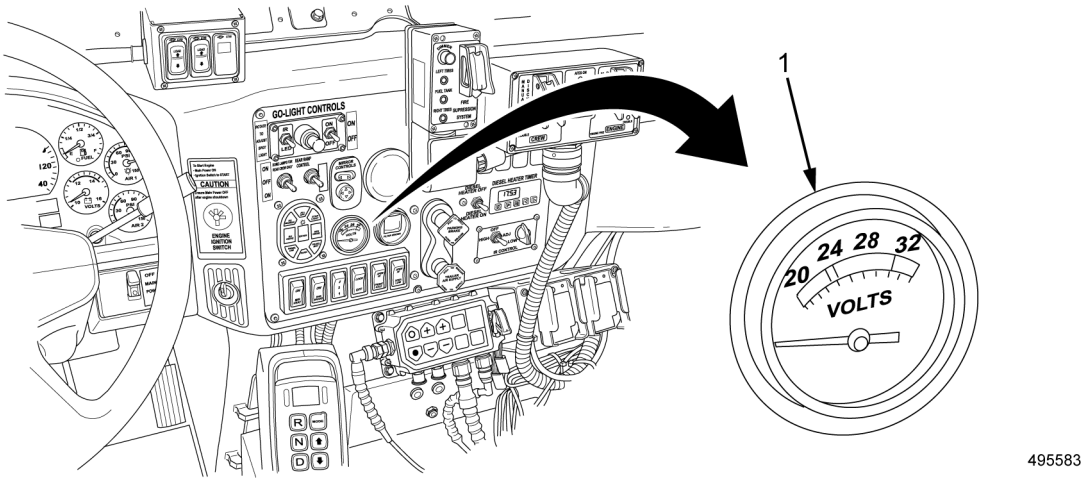
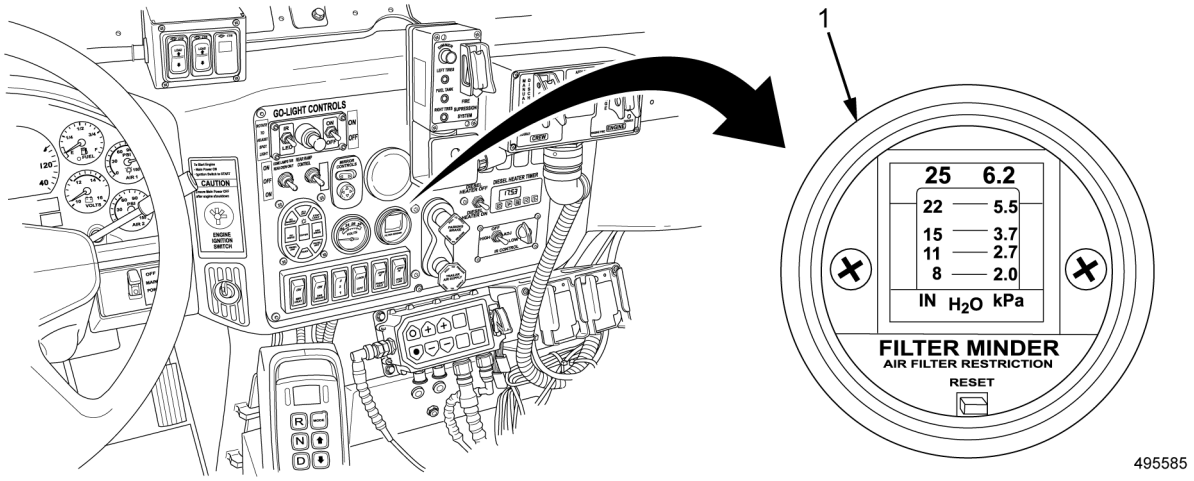


Figure 80. IP Cluster Gauges.

			7. Check VOLTS gauge, 24V system (Figure 81, Item 1) to see if alternator is charging. Proper operating range is 27 to 29V.	Gauge is not reading in its operating range.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Figure 81. VOLTS, 24V System Gauge.	
66	During	Engine	1. Listen for any unusual noises, which may cause the RED ENGINE light to display. Refer to WP 0077, Engine System Troubleshooting Procedures. 2. Check AIR FILTER RESTRICTION gauge (Figure 82, Item 1) on IP for indication of filter element air restriction. For element replacement refer to WP 0091, Air Cleaner Assembly Service.	Any AMBER or RED ENGINE light on. AIR FILTER RESTRICTION gauge indicates RED zone.
				
			Figure 82. AIR FILTER RESTRICTION Gauge.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
67	During	Transmission	1. Check operation for smooth shifting through gears. Refer to WP 0016, Operation Under Usual Conditions - Transmission Operation. 2. Check if CHECK TRANS light illuminates and transmission gear selector window is flashing the gear the transmission is locked into. This indicates the transmission is in LIMP mode.	Transmission is malfunctioning. CHECK TRANS light illuminates.
68	During	Transfer Case, Front Axle, and Rear Differential Lock	1. Check for proper shifting in and out of LOW and HI selections. Refer to WP 0017, Operation Under Usual Conditions - Four Wheel Drive Operation. 2. Check for proper ON or OFF engagement of front axle. Refer to WP 0017, Operation Under Usual Conditions - Four Wheel Drive Operation. 3. Check for proper ON or OFF engagement of DIFF LOCK switch. Refer to WP 0004, Description and Use of Operator Controls and Indicators.	Transfer case or switch is malfunctioning. Front axle or switch is malfunctioning. Rear axle or switch is malfunctioning.
69	During	Steering	1. Check steering for binding, play, and range of motion.	Steering gear is malfunctioning.
70	During	Cruise Control	1. Check cruise control for proper operation. Refer to WP 0032, Operation Under Usual Conditions - Cruise Control Operation.	
71	After	Lights and Horns	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch ON, ignition switch to RUN, and wheels chocked. Non-working lights violate AR 385-10. 1. Check that all lights illuminate using Master Vehicle Light Switch (MVLS) and are clean. Check emergency flashers. Refer to WP 0004, Description and Use of Operator Controls and Indicators. Refer to AR 385-10. 2. Check operation of horn by turning ignition switch on, turning lights on, and pressing the horn symbol on steering wheel pad. Refer to AR 385-10.	Any light does not function.
72	After	Spotlight	**CAUTION** Non-working lights violate AR 385-10.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Check spotlight. Refer to WP 0004, Description and Use of Operator Controls and Indicators.	
73	After	Power and Heated Mirrors	1. Check power mirrors and heated mirrors for proper operation. Refer to WP 0004, Description and Use of Operator Controls and Indicators and AR 385-10. 2. Inspect for broken, cracked, or loose mirrors. Check that visibility is not impaired due to dirty mirrors. Check that mirrors move freely. Refer to AR 385-10.	
74	After	FSS Controls	**NOTE** FSS Light Emitting Diodes (LEDs) may be on but appear off if dimmer switch is turned down. 1. Check that all LEDs (Figure 83, Item 4, 5, and 6) are on steady GREEN. Adjust dimmer switch (Figure 83, Item 1) to brighten LEDs as necessary. 2. Check that LEFT TIRES LED (Figure 83, Item 6), RIGHT TIRES LED (Figure 83, Item 4), or FUEL TANK LED (Figure 83, Item 5) is not blinking. If LED is blinking, notify Field Level Maintenance. 3. Check that toggle switch guard (Figure 83, Item 2) is secured with safety wire (Figure 83, Item 3). If safety wire is missing, notify Field Level Maintenance.	Any system LED is OFF. Any system LED is blinking.

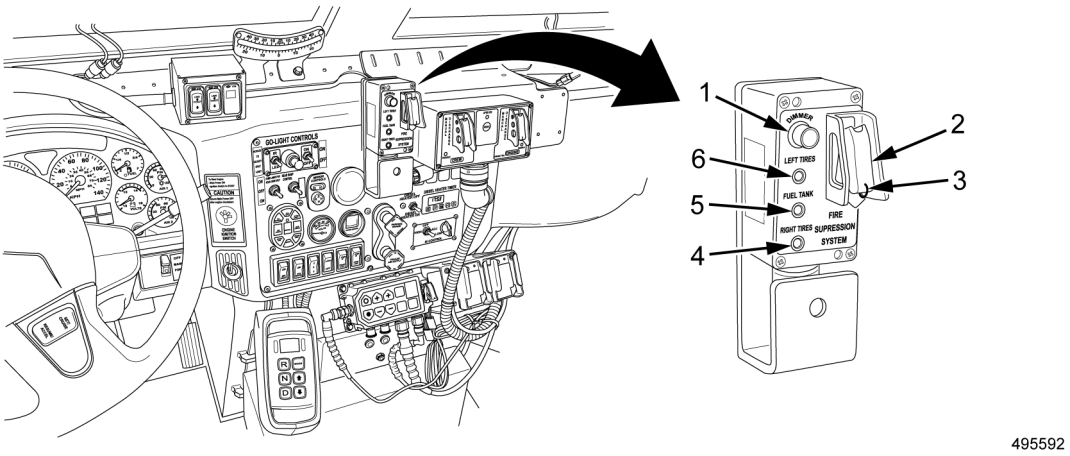


Figure 83. FSS Control Panel.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
75	After	AFES Controls	**NOTE** TROUBLE LEDs temporarily come on when vehicle is started. 1. Check AFES LED (Figure 84, Item 2) does not illuminate or blinks. Refer to WP 0065, Emergency Operation Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS). 2. Check that CREW TROUBLE LED (Figure 84, Item 5) or ENGINE TROUBLE LED (Figure 84, Item 4) does not illuminate or blinks. If LED remains ON or blinks, refer to WP 0065, Emergency Operation Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS). 3. Check that toggle switch guards (Figure 84, Item 1) are secured with safety wire (Figure 84, Item 3). Refer to AR 385-10, para 11–3. If safety wire is missing, notify Field Level Maintenance.	AFES ON LED is blinking or off. Any TROUBLE LED remains on or blinking.

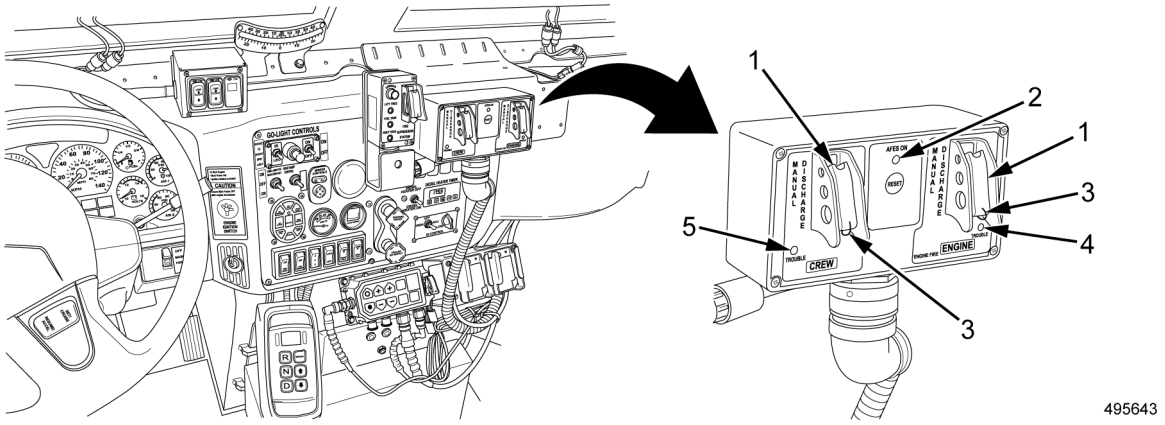


Figure 84. AFES Control Panel.

76	After	AFES BBU	**WARNING** Operating vehicle without the BBU fully charged may result in the automatic AFES not operating in the event of a power failure. If BBU does not charge, contact Field Level Maintenance. Failure to comply may result in serious injury to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			NOTE It may take a few seconds for LED to illuminate. The BBU is shown out of vehicle for clarity. The BBU is located behind the driver seat near the base of the seat and has a 3 year life. Operating vehicle with an expired battery is not recommended. 1. Confirm that BBU (Figure 85, Item 1) is present and connected. If disconnected, reconnect. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable. 2. Verify BBU LED (Figure 85, Item 2) is GREEN. Refer to WP 0102, Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable.	BBU is missing or damaged. LED is RED or off.

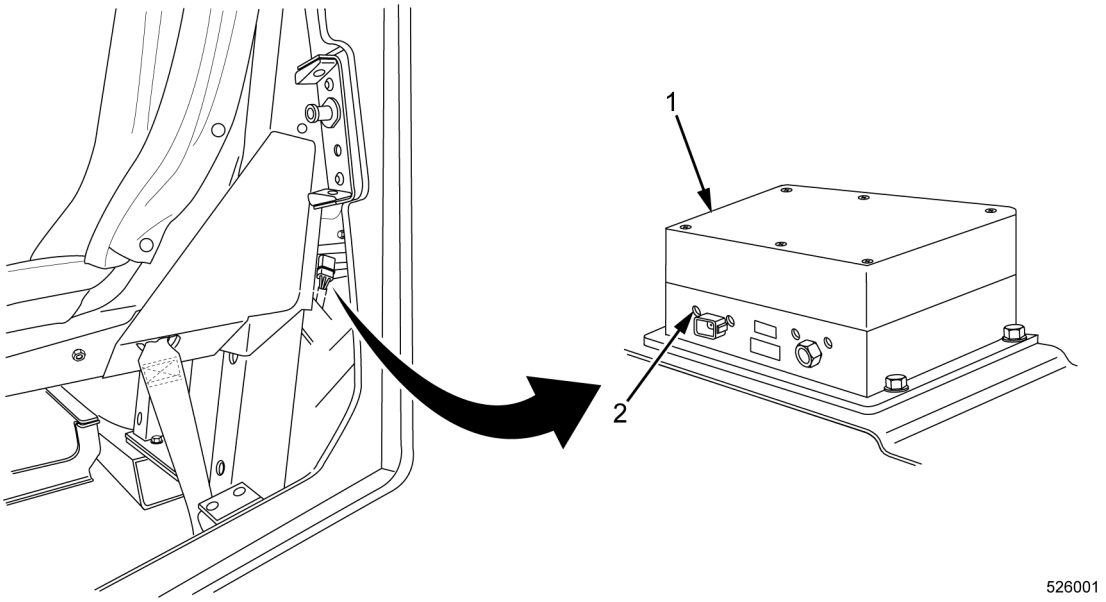


Figure 85. AFES BBU.

77	After	AFES Sensors	**NOTE** There are two engine AFES sensors and three cabin AFES sensors to inspect.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Inspect cabin AFES sensors (Figure 86, Item 1) for GREEN LEDs (Figure 86, Item 3) that are off, missing, broken or disconnected wire connectors (Figure 86, Item 2). Refer to WP 0065, Emergency Operation Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	LEDs are off. Wire connectors are missing or broken.

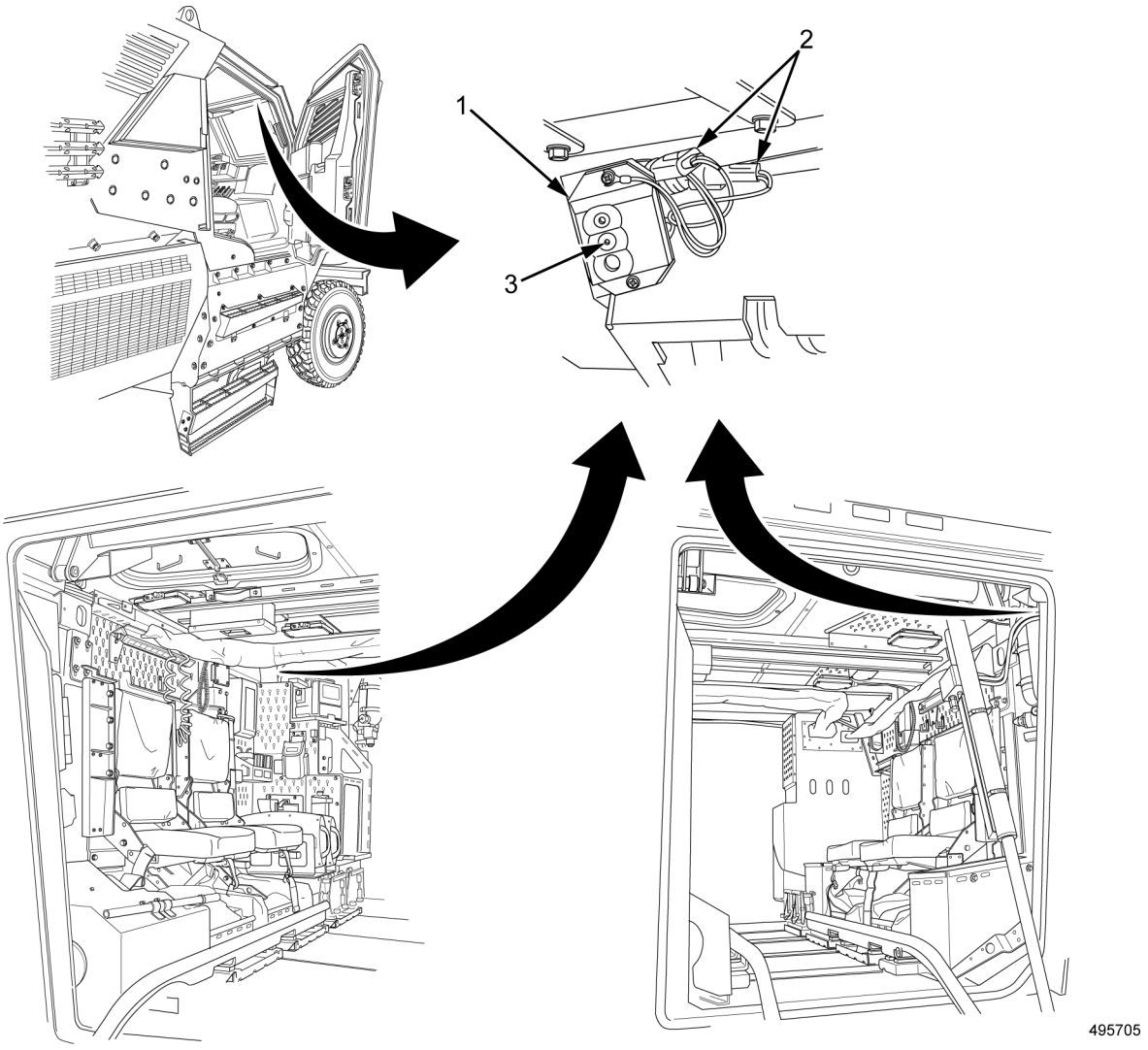


Figure 86. Cabin AFES Sensor.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect engine AFES sensors (Figure 87, Item 2) for GREEN LEDs (Figure 87, Item 1) that are off, and for missing, broken or disconnected wires (Figure 87, Item 3). Refer to WP 0065, Emergency Operation Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	LEDs are off. Wire connectors are missing, or broken.

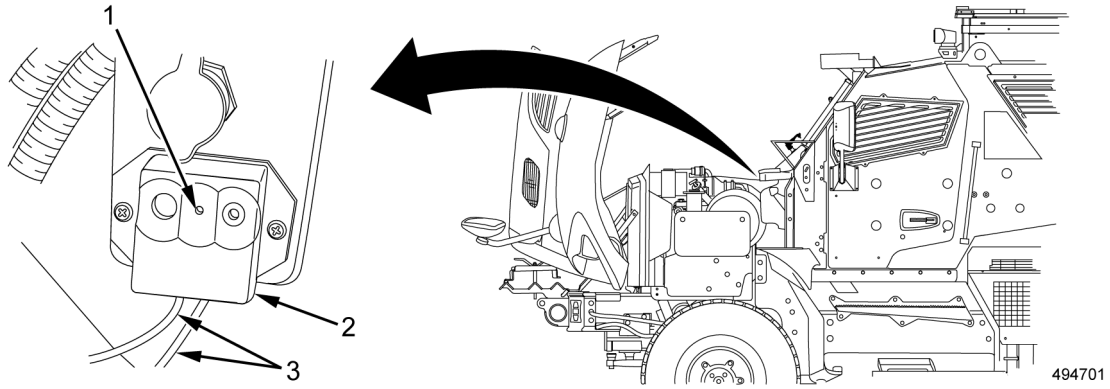
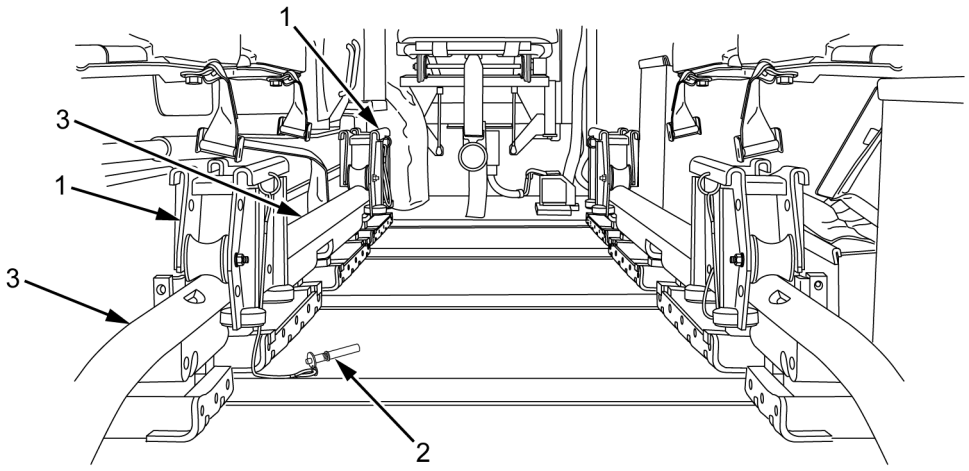
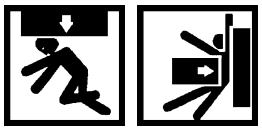


Figure 87. Engine AFES Sensor (Driver Side Shown; Commander Side Similar).

78	After	Trolley Slides and Rails	**NOTE** Driver side shown; commander side similar. 1. Inspect rails (Figure 88, Item 3) for any damage. 2. Inspect trolley slide pins (one per trolley) (Figure 88, Item 2) for missing or any damage. 3. Remove trolley slide pins (one per trolley) (Figure 88, Item 2) and verify trolley slides (Figure 88, Item 1) move up and down freely on rails. 4. Install trolley slide pins (Figure 88, Item 2) in trolley slides (one per trolley) (Figure 88, Item 1).	Any damage that prevents operation. Any missing parts or damage that prevents operation. Any trolley slide that does not move freely.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 88. Trolley Slides and Rails.	
79	After	Rear Door/ Ramp	**WARNING**  Ensure no one is behind vehicle when lowering rear door/ramp. Use extreme caution when using emergency rear door/ramp release to ensure that no one is struck by door as it falls open. Sound horn before lowering rear door/ramp. Do not operate rear door/ramp while vehicle is in motion. Failure to comply may result in serious injury or death to personnel. 1. Check rear door/ramp hinges (Figure 89, Item 1) and mounting hardware (Figure 89, Item 2) for cracked or broken hinges and missing or loose hinge bolts or nuts.	Ramp hinges are cracked or broken; mounting hardware is missing or has loose bolts or nuts.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

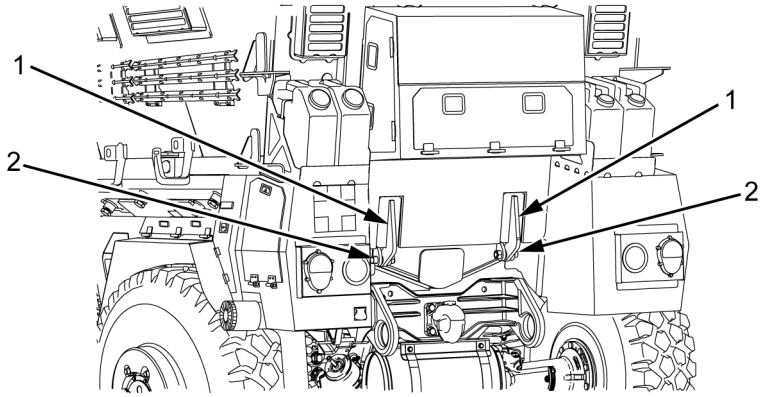


Figure 89. Rear Door/Ramp Hinges.

			2. Check area under rear door/ramp pump for leaks.	Any leak is noticed.
			3. Check lock pin (Figure 90, Item 3) and bridge pin (Figure 90, Item 2) on hydraulic cylinder (Figure 90, Item 1) for cracked, broken or missing lock pin, or missing bridge pin.	Any lock pin is cracked, broken, or missing. Any bridge pin is missing.
			4. Check rear door/ramp door seal for cuts, tears, or missing door seal.	

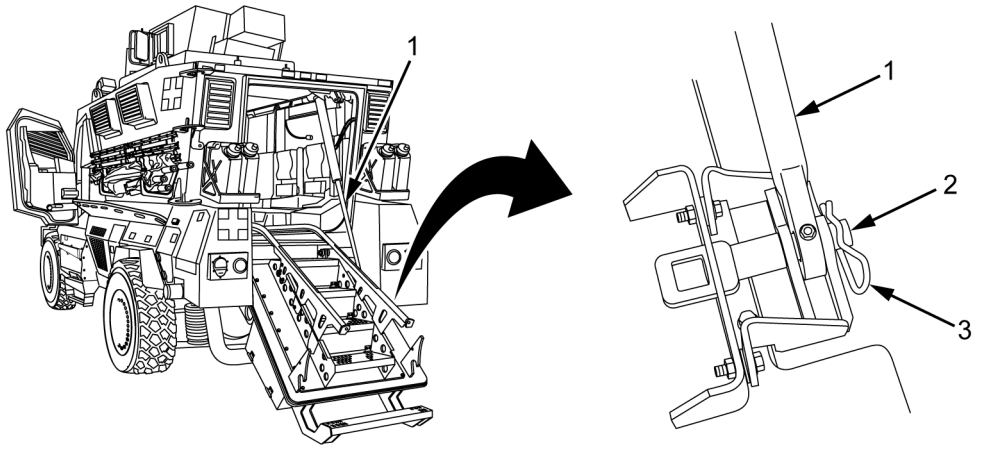


Figure 90. Rear Door/Ramp.

			5. Check two hydraulic lines (Figure 91, Item 2) from hydraulic transfer block (Figure 91, Item 4) and hydraulic cylinder (Figure 91, Item 3) to hydraulic unit (Figure 91, Item 1) for leaks. Hydraulic lines are routed over rear door/ramp.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			6. Check valves (Figure 91, Item 5 and 6) around hydraulic unit (Figure 91, Item 1) for leaks.	
			7. Operate rear door/ramp. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Operation.	Rear door/ramp will not operate or malfunctions.

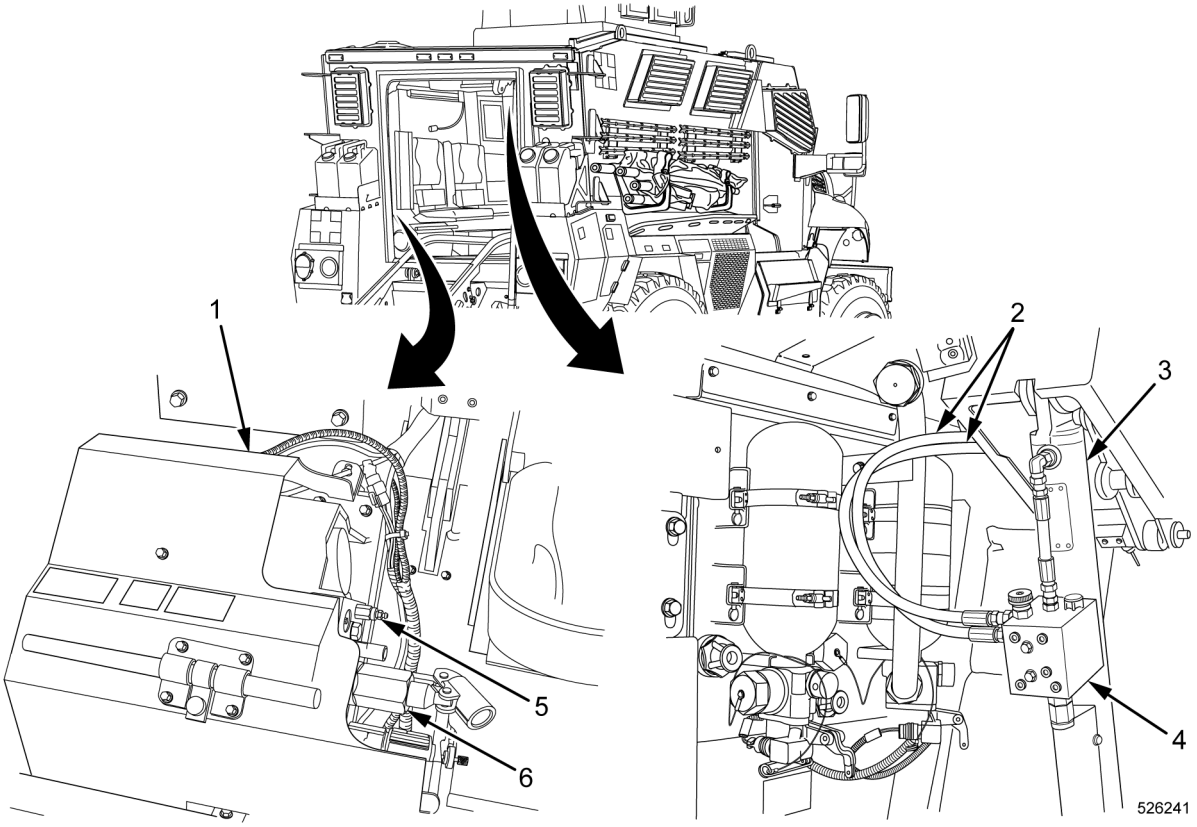


Figure 91. Rear Door/Ramp.

80	After	Inclinometer	**WARNING** Inclinometers measure vehicle side angles of slope/tilt. Failure to comply may result in rollover during vehicle movement, causing serious injury or death to personnel and/or damage to equipment. **NOTE** Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Check inclinometer mounting hardware for cracked, broken, missing or loose bolts or nuts.	Inclinometer mounting hardware is cracked, broken, missing, or loose bolts/nuts.
			2. Verify indicator ball (Figure 92, Item 1) position is located in center at 0°/0%. If vehicle is parked on level surface and indicator ball is not centered, notify Field Level Maintenance. Refer to AR 385-10.	Indicator ball is not located in center at 0°/0%.

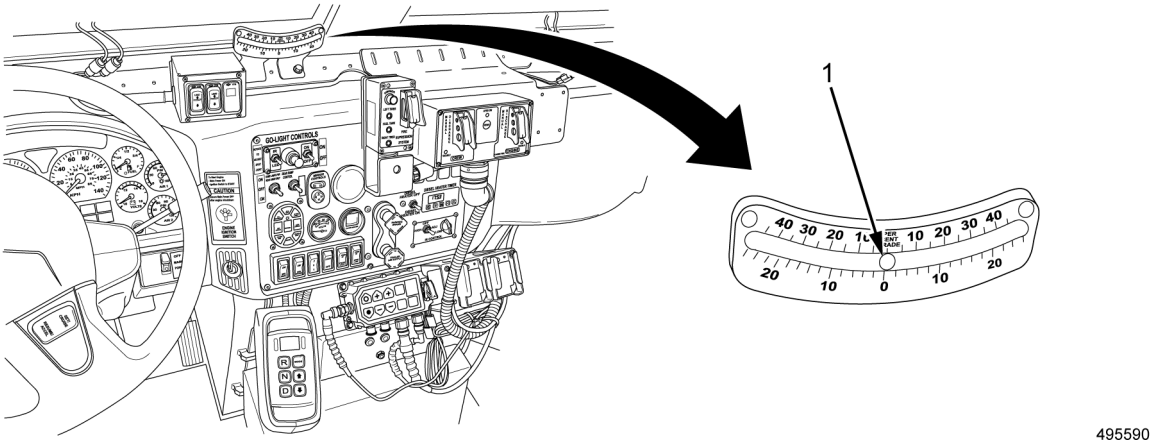


Figure 92. Inclinometer.

81	After	Interior Transparent Armor	**CAUTION** Do not use ammonia or any cleaning product that contains ammonia to clean transparent armor. Ammonia breaks down the bond between the inner and outer layers of transparent armor. Do not use aerosol window cleaners. Aerosol propellent may cause transparent armor separation. Failure to comply may result in damage to equipment. 1. Inspect transparent armor for damage that would impair operator's vision. 2. Inspect surface of transparent armor for complete breaks, damage, scratches, gouges, delamination, tape, decals, adhesives, or limited visibility that would impair operator's vision. Refer to AR 385-10.	The bond between armor and frame is separated from armor or frame. Any complete break on surface of armor. Any major damage to the surface of the armor.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
82	After	Driver and Commander Seats	**NOTE** Driver seat shown; commander seat similar. 1. Inspect all mounting hardware is present and securely fastened. 2. Make sure seat pads (Figure 93, Item 1) are not torn or damaged. 3. Check seat adjustment lever (Figure 93, Item 2) is firmly engaged to avoid forward or rearward movement when starting or stopping. Refer to WP 0006, Operation Under Usual Conditions - Driver Seat Adjustment.	Mounting hardware is missing or damaged. Seat cannot be secured correctly.

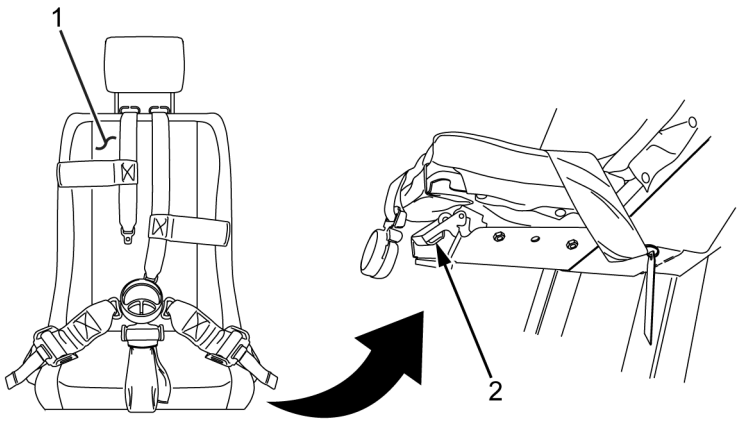
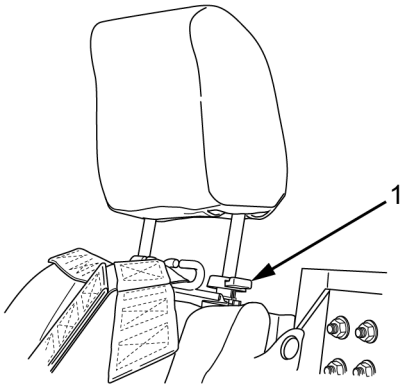
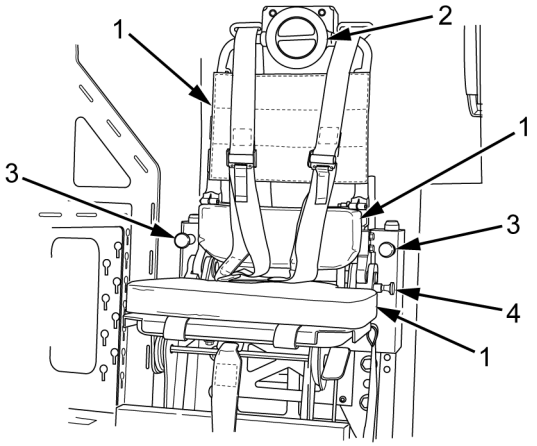
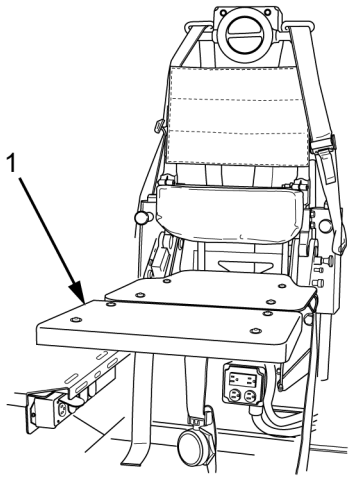


Figure 93. Seat Adjustment Lever.

			4. Push headrest adjustment lever (Figure 94, Item 1) to check headrest raises and lowers. Release to lock headrest at desired height.	



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Figure 94. Headrest Adjustment Lever.	
83	After	Medic Seat	1. Inspect for missing, loose, or damaged mounting hardware.	Mounting hardware is missing or damaged.
			2. Make sure seat pads (Figure 95, Item 1) are not torn or damaged.	
			3. Check seat back release operation by rotating handle (Figure 95, Item 2) clockwise or counterclockwise to release back of seat (Figure 95, Item 1). Refer to WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment.	Medic Seat cannot be secured correctly.
			4. Check seat height adjustment knobs (Figure 95, Item 3) are firmly engaged to avoid movement during use. Refer to WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment.	Medic Seat cannot be secured correctly.
			5. Check folding seat bottom lock (Figure 95, Item 4) is firmly engaged to avoid movement during use. Refer to WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment.	Medic Seat cannot be secured correctly.
			 Figure 95. Medic Seat Adjustment.	
84	After	Gunner Platform	1. Inspect all mounting hardware is present and securely fastened.	Mounting hardware is missing or damaged.
			2. Verify gunner platform extension (Figure 96, Item 1) locks firmly into all positions. Refer to WP 0026, Operation Under Unusual Conditions - Gunner Platform.	Platform cannot be secured correctly.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 491003	
			Figure 96. Gunner Platform.	
85	After	Rear Passenger Seats	**NOTE** Lower seat bottom can be raised to inspect hardware. Driver side shown; commander side similar. 1. Inspect for missing, loose, or damaged mounting hardware. 2. Make sure seat pads (Figure 97, Item 3, 4, and 5) are not torn or damaged. 3. Check seat back release operation by pulling seat back release strap (Figure 97, Item 1) to release seat back. Firmly push seat back up to lock into up position. Refer to WP 0007, Operation Under Usual Conditions - Passenger Seat Adjustment. 4. Pull release strap (Figure 97, Item 1) to unlock seat back (Figure 97, Item 5) for lowering. Pull knob (Figure 97, Item 2) and lock back of seat (Figure 97, Item 1) in the lowered position by releasing knob. Check that knob (Figure 97, Item 2) is firmly engaged.	Mounting hardware missing or damaged. Passenger seat cannot be secured correctly. Passenger seat cannot be secured correctly.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

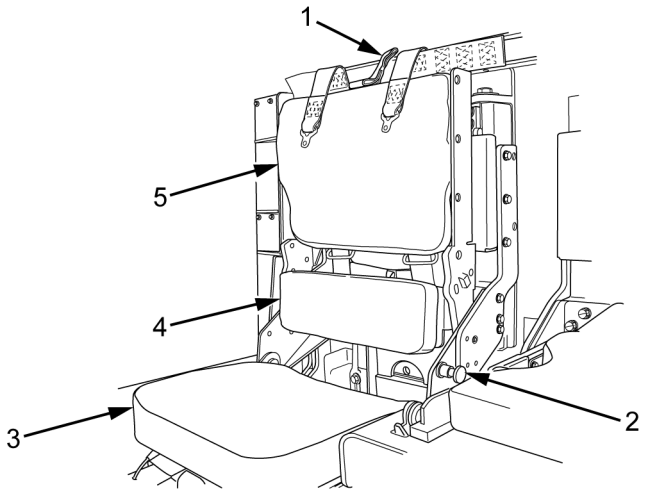


Figure 97. Rear Passenger Seat Lever.

			5. When seat back (Figure 98, Item 3) is in down position, inspect or loose, missing or damaged hardware (Figure 98, Item 2). Lift seat pad (Figure 98, Item 1) to check for loose, missing, or damaged hardware.	Hardware loose, missing, or damaged.

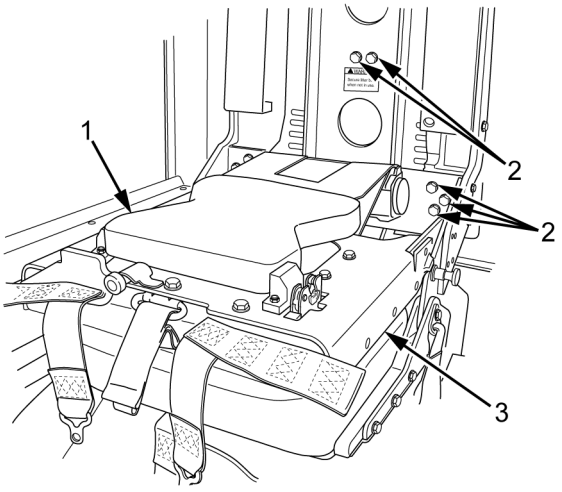


Figure 98. Seat Back in Down Position.

86	After	Seat Belts (Drivers, Commander, Medic, and Passenger)	1. Inspect driver and commander seat belts (Figure 99, Item 1), passenger seat belts (Figure 99, Item 2), and medic seat belts (Figure 99, Item 3) for damage, frays, or broken buckles.	Seat belts are damaged, or frayed. Seat belt buckles broken, damaged, or missing.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect seat belts (Figure 99, Item 1, 2, and 3) for proper operation. Refer to WP 0009, Operation Under Usual Conditions - Seat Belt Operation.	Seat belt damaged or not functional.

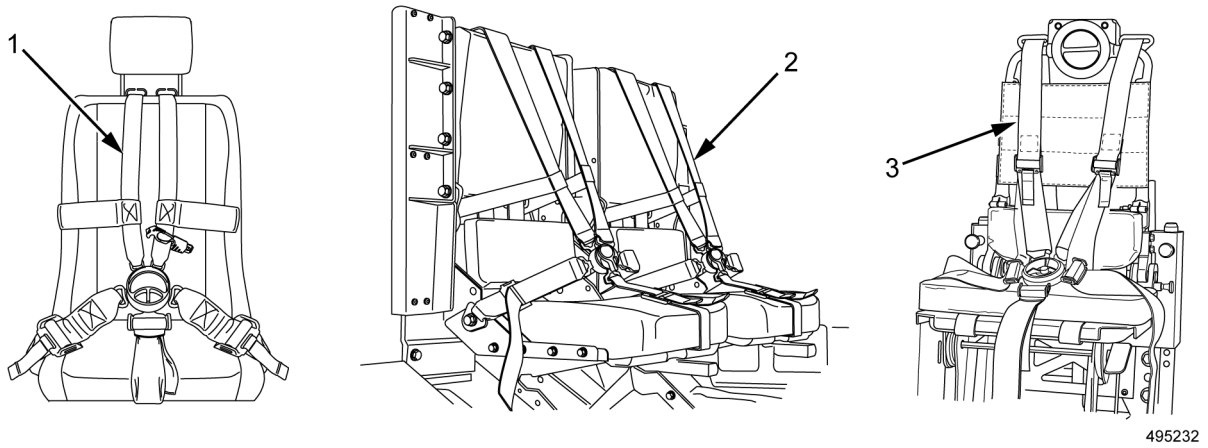
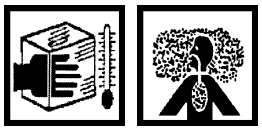


Figure 99. Seat Belts.

87	After	Interior AFES Extinguishers and Nozzles	**WARNING**  Automatic Fire Extinguishing System (AFES) extinguisher can move violently when discharging. Ensure extinguisher is properly secured during use. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. **NOTE** The vehicle has three interior AFES extinguishers. Rear forward extinguisher pressure gauge shown; others similar. 1. Confirm that all AFES extinguishers (Figure 100, Item 1) and (Figure 101, Item 1) are mounted on vehicle. 2. Check all bolts, nuts, and other fasteners on AFES brackets for tightness.	AFES extinguishers are missing. AFES extinguishers are not securely mounted.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Verify each extinguisher pressure gauge (Figure 100, Item 3) meets minimum requirements for ambient temperature and pressure, according to gauge and label (Figure 100, Item 2) on bottles.	Pressure gauge needle does not meet minimum requirements for ambient temperature and pressure.
			4. Inspect nozzles, hoses, and fittings for obstructions, looseness, or cracks. Refer to WP 0065, Emergency Operation Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	Nozzles are obstructed, hoses are broken or cracked, or fittings are loose.

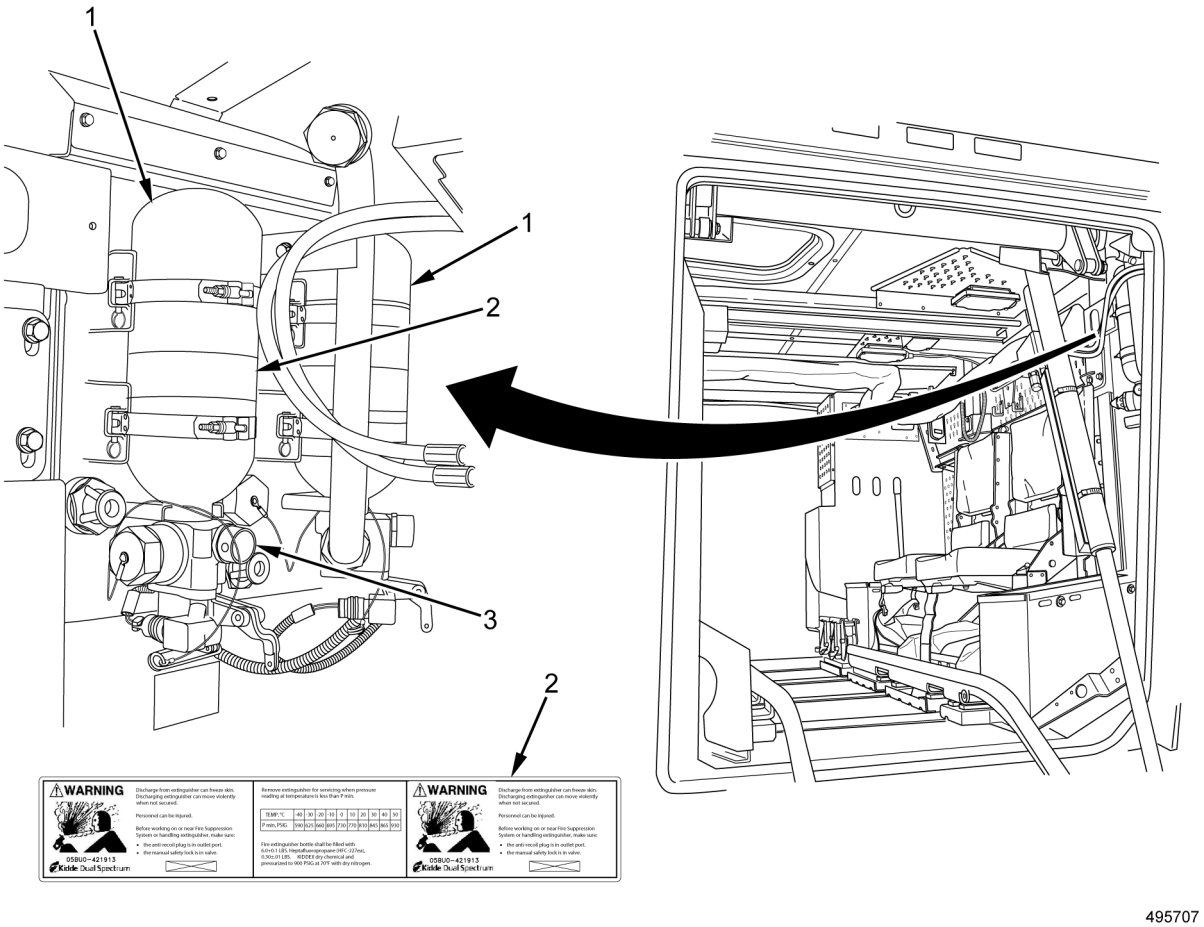
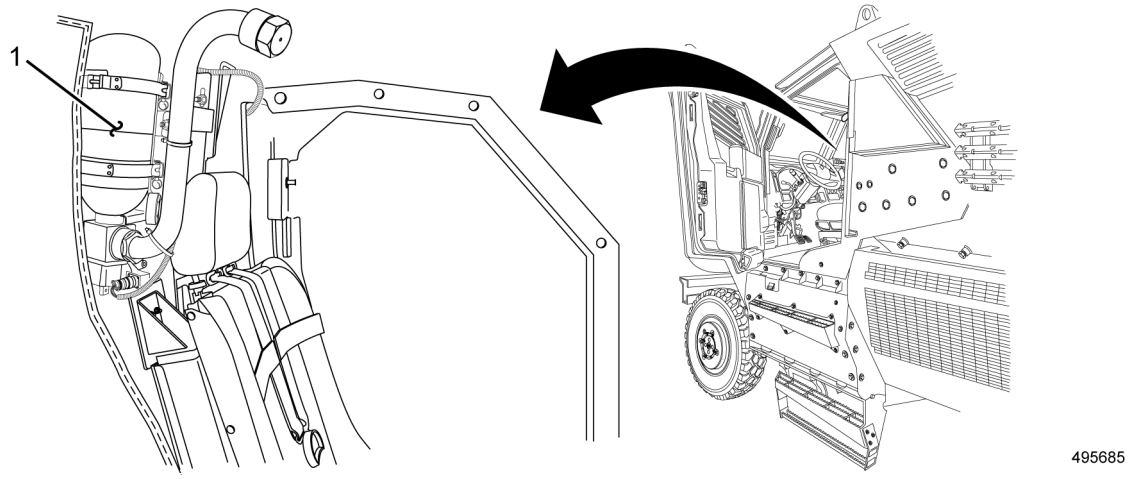
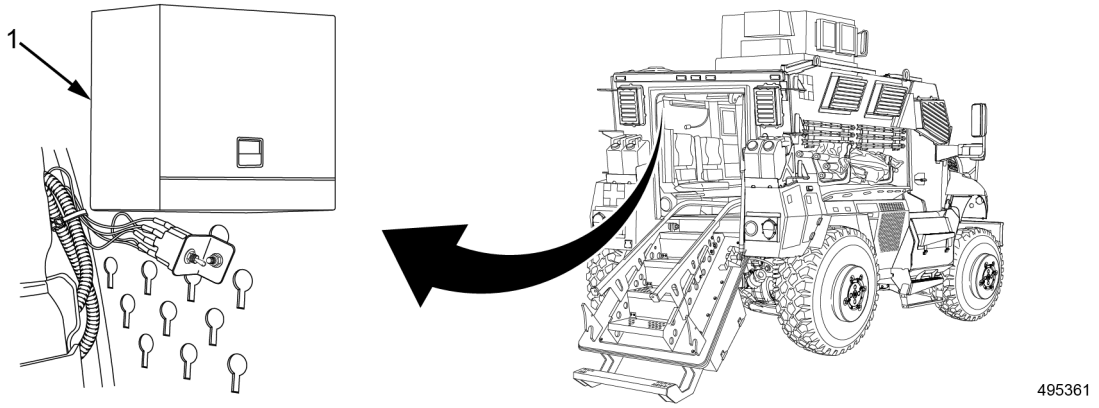


Figure 100. Passenger Compartment AFES Extinguishers.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 101. Driver Compartment AFES Extinguisher.	
88	After	Internal Stowage Compartment	**NOTE** There are four internal stowage compartments in the vehicle; one attached to peg board at rear of vehicle and three between rear door/ramp steps. 1. Check mounting hardware for stowage compartments (Figure 102, Item 1) for cracked or broken hinges and missing or loose bolts or nuts.	Mounting hardware is missing or has loose bolts or nuts.
			 Figure 102. Passenger Stowage Compartment.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Check access doors (Figure 103, Item 2) for cracked or broken hinges and missing or loose hinge bolts, pins, or nuts.	Access door hinges and pins are cracked, or broken; mounting hardware is missing or has loose bolts or nuts.
			3. Check that latches (Figure 103, Item 1) and access doors (Figure 103, Item 2) are operational. Refer to WP 0073, Stowage and Decal/Data Plate Guide.	Access doors do not close properly.

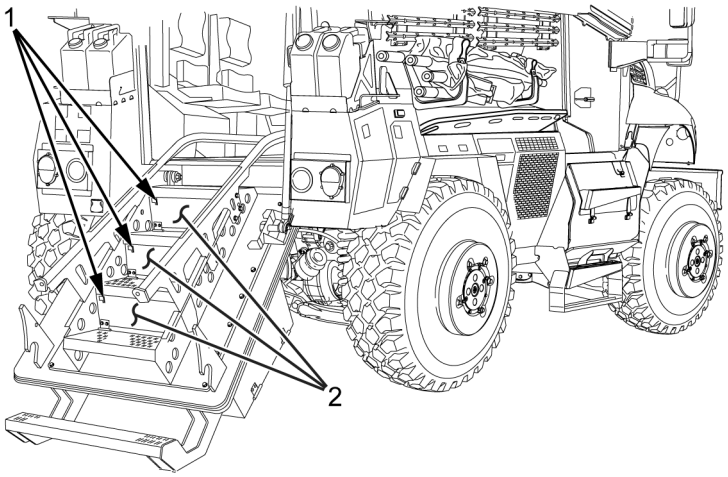


Figure 103. Rear Door/Ramp Internal Stowage Compartment.

89	After	Storage Bags	**NOTE** There are five storage bags inside passenger compartment and seven storage bags inside turret. 1. Inspect storage bags (Figure 104, Item 1), (Figure 105, Item 1), and (Figure 106, Item 1) zippers and buckles to ensure they open and close properly. 2. Check stowage bags for secure stowage.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

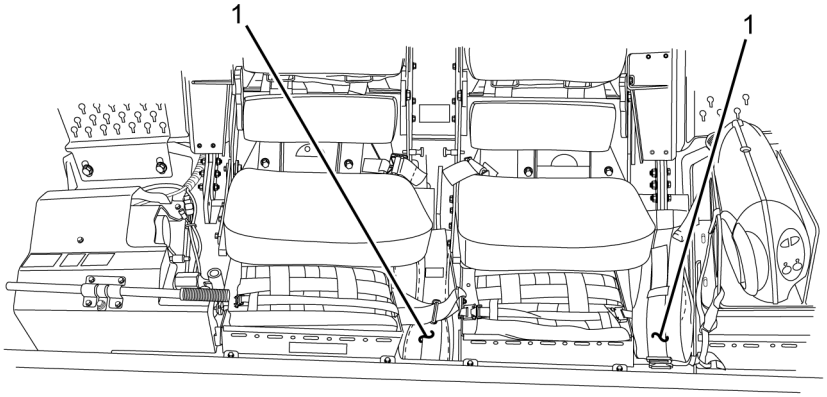


Figure 104. Driver Side Cabin Storage Bags.

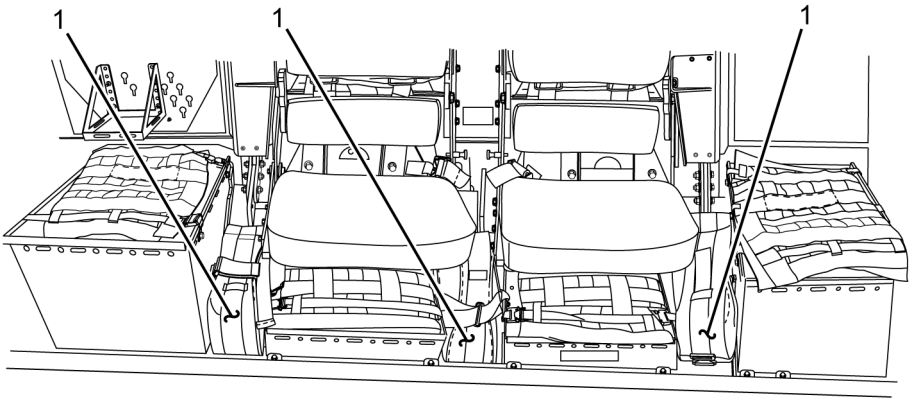


Figure 105. Commander Side Cabin Storage Bags.

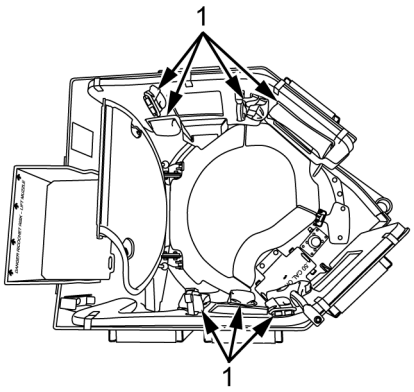


Figure 106. Turret Storage Bags.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
90	After	Emergency Hatch Handle	1. Check that emergency hatch handle (Figure 107, Item 2) functions and latches properly. Refer to WP 0062, Emergency Operations - Emergency Hatch (Roof).	Emergency hatch handle does not function or latch properly.
			2. Check that emergency hatch (Figure 107, Item 1) opens and closes properly. Refer to WP 0062, Emergency Operations - Emergency Hatch (Roof).	Emergency hatch does not function properly.

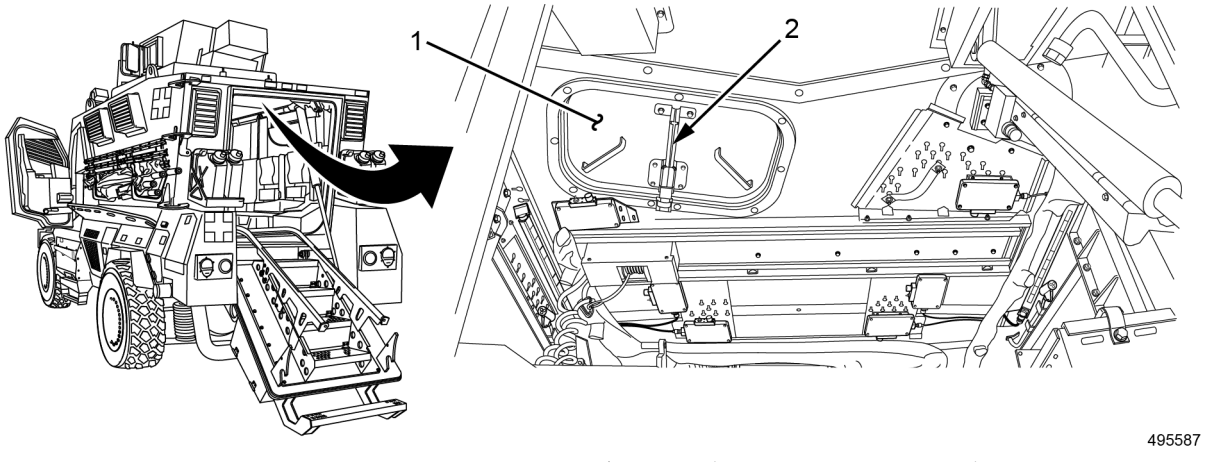
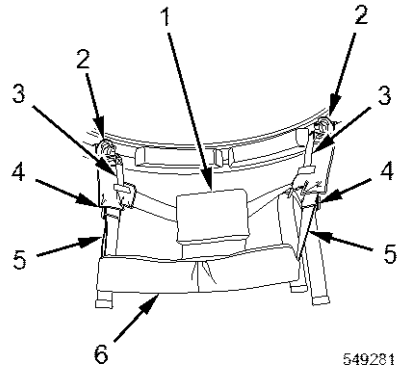
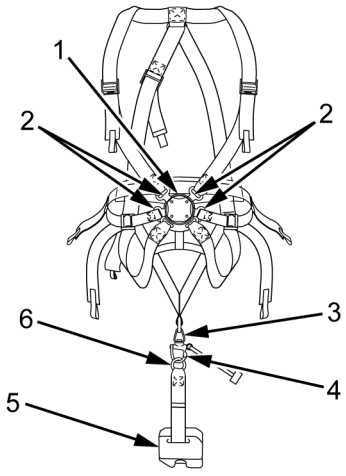
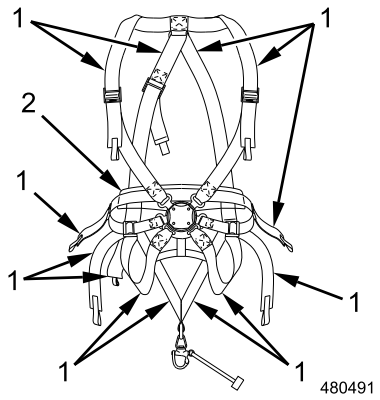
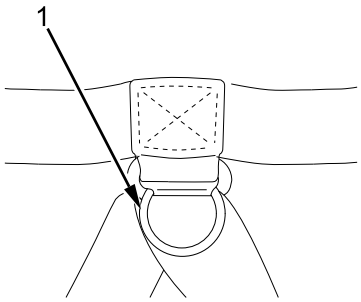
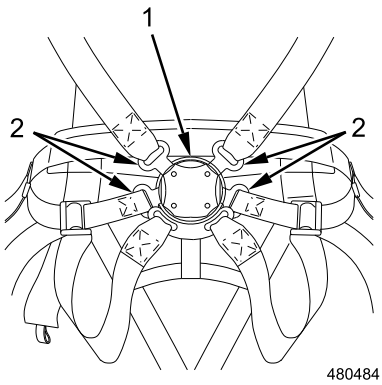
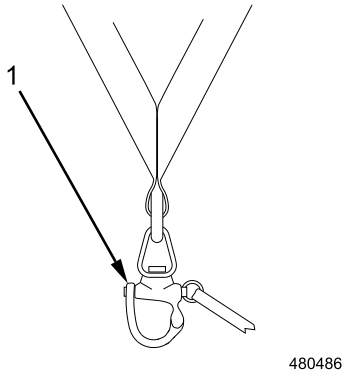


Figure 107. Emergency Hatch.

91	After	BEATS	1. Check pelican clip (Figure 108, Item 2) is present, securely fastened, and functions properly. Refer to WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Turret Seat (BEATS) Operation.	Mounting hardware is missing or damaged.
			2. Inspect straps (Figure 108, Item 5) for wear and damage or missing associated hardware.	Any component is missing or damaged.
			3. Check backrest (Figure 108, Item 1) and pad (Figure 108, Item 6) are not torn or damaged.	Seat back or pad is unserviceable.
			4. Check proper operation of strap adjusters (Figure 108, Item 4). Refer to WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Turret Seat (BEATS) Operation.	Strap adjusters do not operate properly.
			5. Check proper operation of emergency pull tabs (Figure 108, Item 3). Refer to WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Turret Seat (BEATS) Operation.	Emergency pull tabs do not operate properly.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 108. BEATS.	
92	After	IGRS	1. Check all metal parts (Figure 109, Item 1, 2, 3, 4, 5, and 6) for wear, corrosion, and/or proper operation. Refer to WP 0024, Operation Under Unusual Conditions - Improved Gunner Restraint System (IGRS) Operation.	Metal parts are worn, corroded, or not operational.
			 Figure 109. IGRS Buckle and Latches.	
			2. Check back pad (Figure 110, Item 2) and all webbing (Figure 110, Item 1) and stitching for cuts, tears, and/or fraying.	Webbing or stitching cut, torn, or frayed.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 110. IGRS Back Pad and Webbing.	
			3. Check D-ring (Figure 111, Item 1) for visual deformation and corrosion.	D-ring deformed, not parallel, or corroded.
			 Figure 111. IGRS D-ring.	
			4. Check that buckle (Figure 112, Item 1) closes and opens completely by attaching four strap latches (Figure 112, Item 2) to buckle and turning buckle to release strap latches.	Buckle does not close or open completely.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 112. IGRS Buckle.	
			5. Check anchor strap pelican clip (Figure 113, Item 1) for proper operation. Refer to WP 0024, Operation Under Unusual Conditions - Improved Gunners Restraint System (IGRS) Operation.	Anchor strap pelican clip does not move freely, pass completely through bail hole when closing, or rotate freely.
			 Figure 113. IGRS Anchor Strap Pelican Clip.	
			6. Check that strap (Figure 114, Item 1) fully extends from floor retractor (Figure 114, Item 2) and retracts back into floor retractor. 7. Check locking mechanism in floor retractor (Figure 114, Item 2) by extending strap (Figure 114, Item 1) approximately 45 in. (114 cm) and jerking on strap until mechanism engages.	Strap does not fully extend or retract. Locking mechanism in floor retractor does not engage.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			8. Check floor retractor (Figure 114, Item 2) for loose, missing, or damaged hardware.	Hardware missing, loose, or damaged.

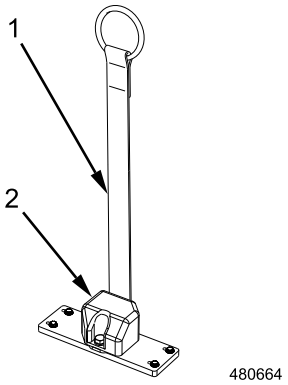


Figure 114. IGRS Strap and Floor Retractor.

93	After	OGPK	**WARNING** Gunner hatch is extremely heavy. Use caution when opening and closing. Keep arms and hands clear of gunner hatch when closing. Failure to comply may result in damage to equipment and serious injury or death to personnel. Be careful of falling or flying dust and debris while in the turret area. Wear safety goggles. Failure to comply may result in serious injury to personnel. **NOTE** Turret hatch pad must be removed prior to performing checks. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation. Battery charge cable must be disconnected prior to performing these checks. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Check that gunner hatch (Figure 115, Item 1) operates smoothly and hatch latch engages and secures hatch in open position. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	Gunner hatch does not operate properly or latch does not engage.
			2. Inspect turret ring (Figure 115, Item 2) for evidence of any sagging that would cause rubbing or binding with OGPK.	Turret does not rotate freely.

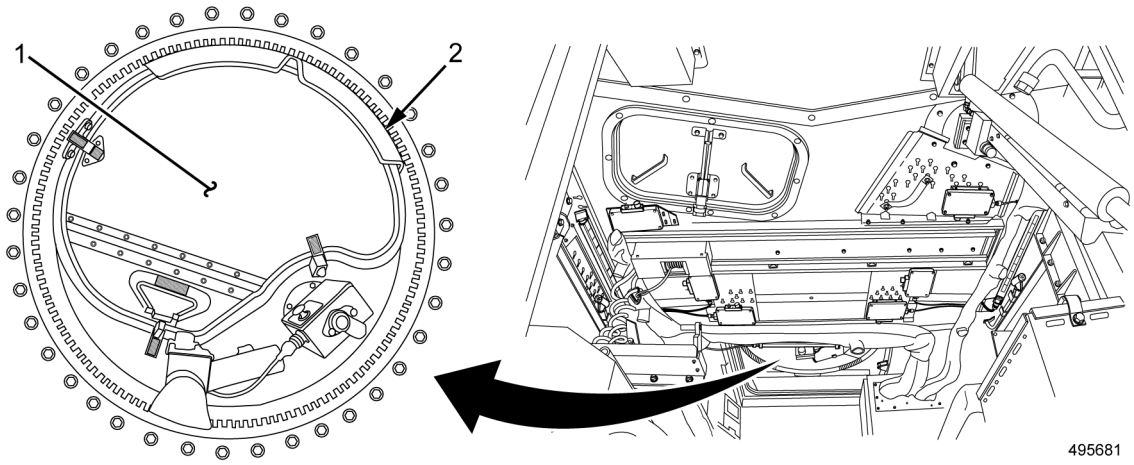


Figure 115. Gunner Hatch and Turret Ring.

			3. Inspect turret ring for broken, loose, or missing hardware.	Broken, loose, or missing hardware.
			4. Pull RED ITDS controller knob ON. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	
			5. Check battery charge level by operating the Improved Turret Drive System (ITDS) CHECK BATTERY push button. Refer to WP 0004, Description and Use of Operator Controls and Indicators.	
			6. Check proper operation of turret motor using joystick. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	Turret sticks, binds or does not rotate freely.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			7. Check operation of manual crank. Refer to WP 0073, Stowage and Decal/Data Plate Guide for stowage location for manual crank. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation. 8. Inspect gunners padding for rips/tears and broken or missing pins. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	Manual crank sticks or binds.
94	After	Exterior of Vehicle	1. Inspect for missing, damaged, loose, leaking, dirty, or corroded components that would impair operation. 2. Visually inspect under vehicle for evidence of fluid leakage.	Missing, damaged, leaking or corroded components that prevent operation. Any Class III leak.
95	After	Armor Panels	1. Inspect for missing, damaged, loose, dirty, or corroded components that would impair operation. 2. Verify that all nuts and bolts are secure. Notify Field Level Maintenance to torque loose nuts and bolts as necessary.	Missing, damaged, or corroded components that prevent operation. Any nuts or bolts loose or missing.
96	After	Exterior Transparent Armor and Riot Guard	**CAUTION** Do not use ammonia or any cleaning product that contains ammonia to clean transparent armor. Ammonia breaks down the bond between the inner and outer layers of transparent armor. Do not use aerosol window cleaners. Aerosol propellent may cause transparent armor separation. Failure to comply may result in damage to equipment. 1. Inspect surface of transparent armor for complete breaks, damage, scratches, gouges, delamination, tape, decals, adhesives, or impaired visibility that would impair operator's vision. Refer to AR 385-10. 2. Inspect windshield frames (Figure 116, Item 1) for damage.	The bond between armor and frame is separated from armor or frame. Any complete break on surface of armor. Any major damage to the surface of the armor. Frames are damaged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

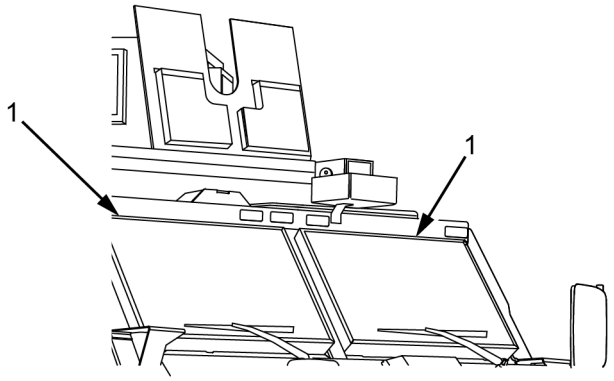


Figure 116. Exterior Transparent Armor.

NOTE

Driver side shown; commander side similar.

3. Inspect riot guards (Figure 117, Item 1 and 2) for damage.

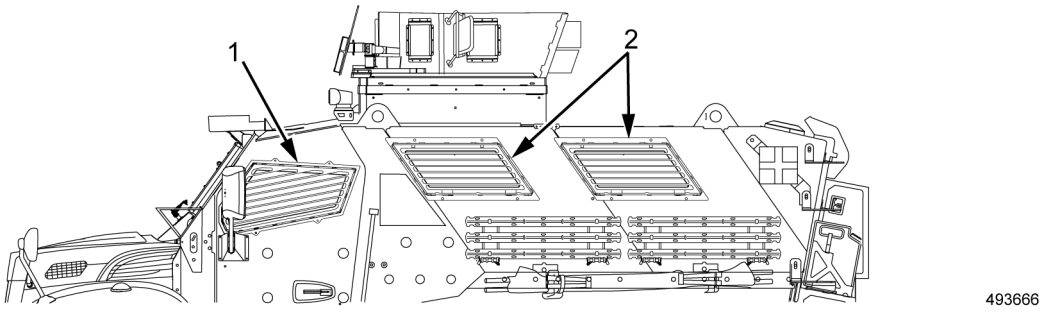
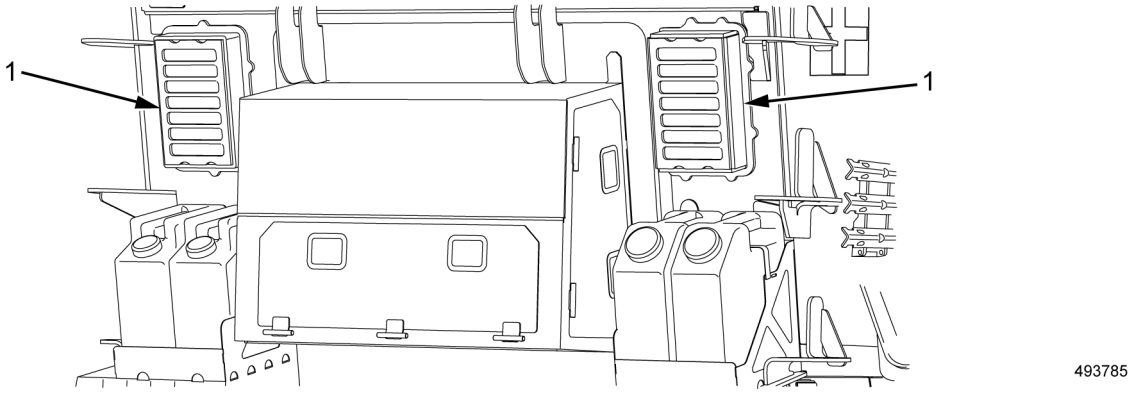


Figure 117. Side Riot Guards.

4. Inspect two rear riot guards (Figure 118, Item 1) for damage.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
Figure 118. Rear Riot Guards.				
97	After	Stowage Bag and Hand Rail	**NOTE** Driver side shown; commander side similar. 1. Inspect stowage bag (Figure 119, Item 3) for wear or damage. 2. Inspect hand rail (Figure 119, Item 2) and four bolts (Figure 119, Item 1) for missing bolts, loose or damage.	
98	After	Side Doors	**NOTE** Driver side shown; commander side similar. 1. Check hinges (Figure 120, Item 1), pins (Figure 120, Item 4), and mounting hardware of side door (Figure 120, Item 2) for cracked or broken hinges and missing or loose pins. 2. Inspect seal (Figure 120, Item 3) on side door (Figure 120, Item 2) for cuts, tears, or missing door seal. 3. Verify side door (Figure 120, Item 2) opens and closes properly. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.	Doors do not close properly.

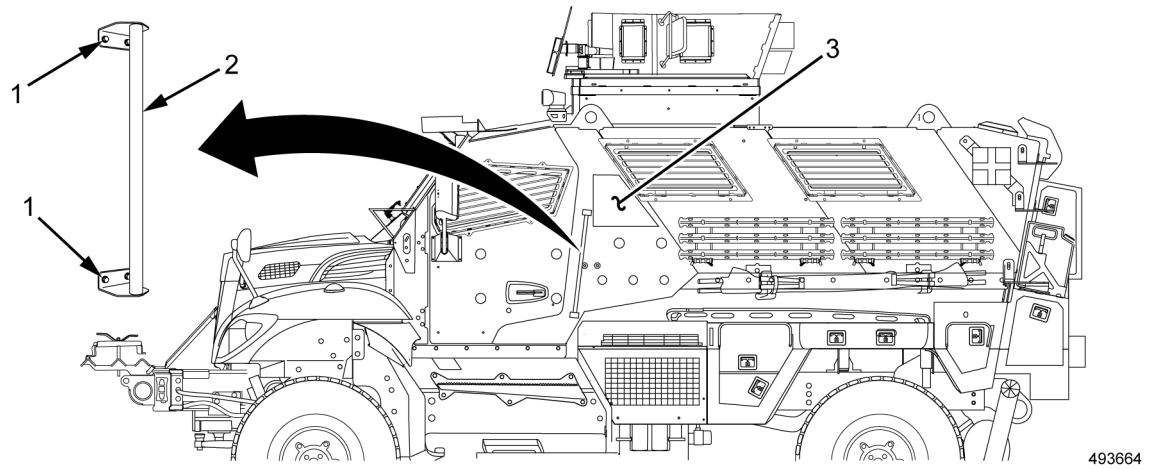
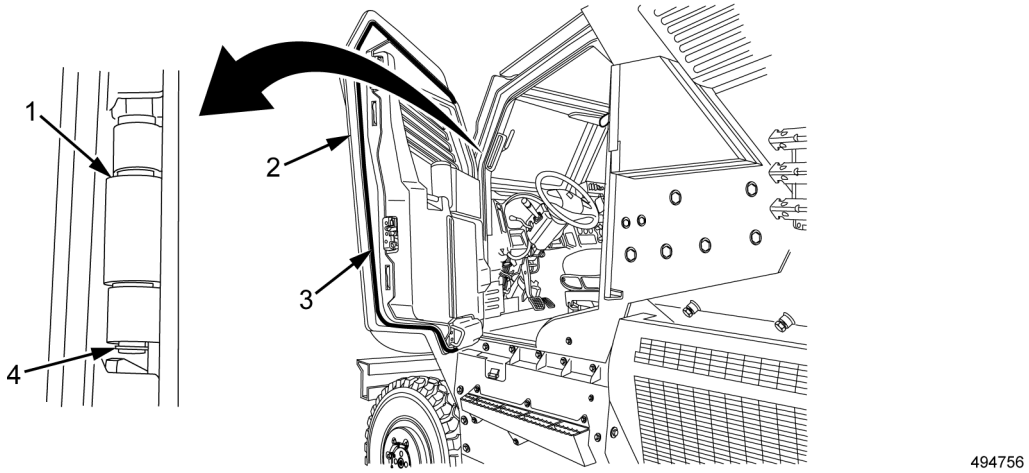
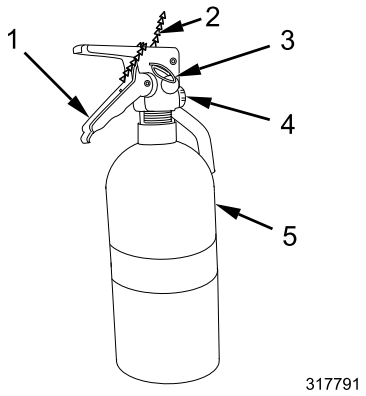


Figure 119. Hand Rail and Stowage Bag.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 120. Side Door.	
			4. Verify operation of combat locks. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation.	Combat locks do not lock.
99	After	Portable Fire Extinguisher	**NOTE** Refer to WP 0074, On-Vehicle Equipment Load Plan for location of portable fire extinguishers.	
			1. Inspect two portable fire extinguishers (Figure 121, Item 5) for any signs of damage or leaks. Make sure handles (Figure 121, Item 1) are not broken and safety seals (Figure 121, Item 2) and safety pins (Figure 121, Item 3) are present.	Fire extinguisher handle is missing or broken, or safety seal or safety pin is missing.
			2. Check that portable fire extinguisher bottles are secure in stowage bracket.	Fire extinguisher bottle cannot be secured in stowage bracket.
			3. Verify extinguisher pressure gauge (Figure 121, Item 4) needles are in GREEN zone.	Pressure gauge needle is not in GREEN zone.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 121. Portable Fire Extinguisher.	
100	After	FSS Extinguishers and Nozzles	**NOTE** The vehicle has three exterior FSS extinguishers. 1. Verify that all fire suppression extinguishers are mounted correctly on driver side (Figure 122, Item 1) and commander side (Figure 123, Item 1) of vehicle. 2. Check all bolts, nuts, and other fasteners on FSS extinguisher brackets for tightness. 3. Verify extinguisher pressure gauge (Figure 122, Item 2) and (Figure 123, Item 2) needle is in GREEN zone. 4. Inspect tire nozzles, hoses, and fittings for obstructions, looseness, or cracks. Check for missing nozzle caps. Refer to WP 0065, Emergency Operation - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	Any FSS extinguisher is missing. FSS extinguishers are not securely mounted. Pressure gauge needles are not in GREEN zone. Nozzles are obstructed or hoses are broken or cracked, fittings are loose, or caps are missing.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

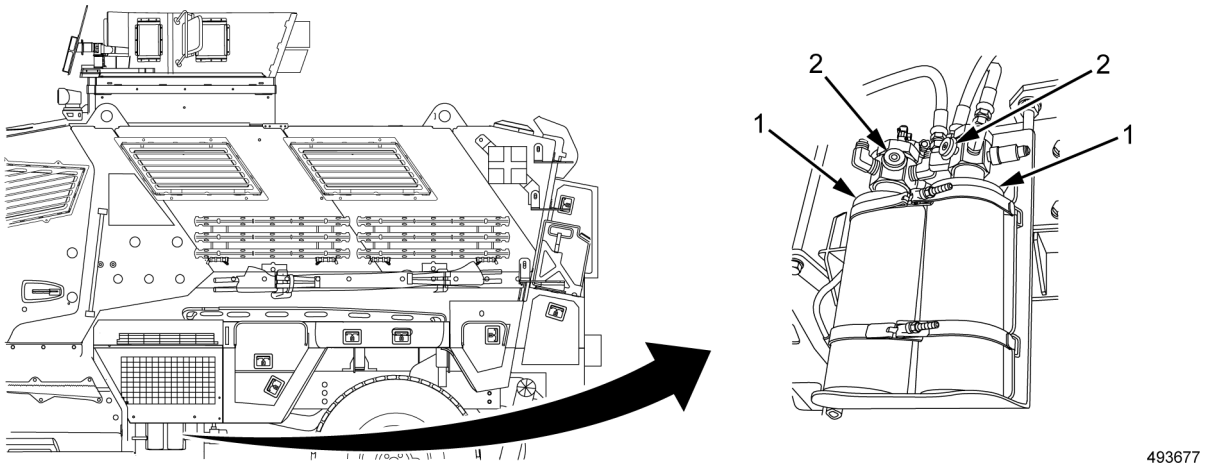


Figure 122. Exterior Driver Side FSS Extinguishers.

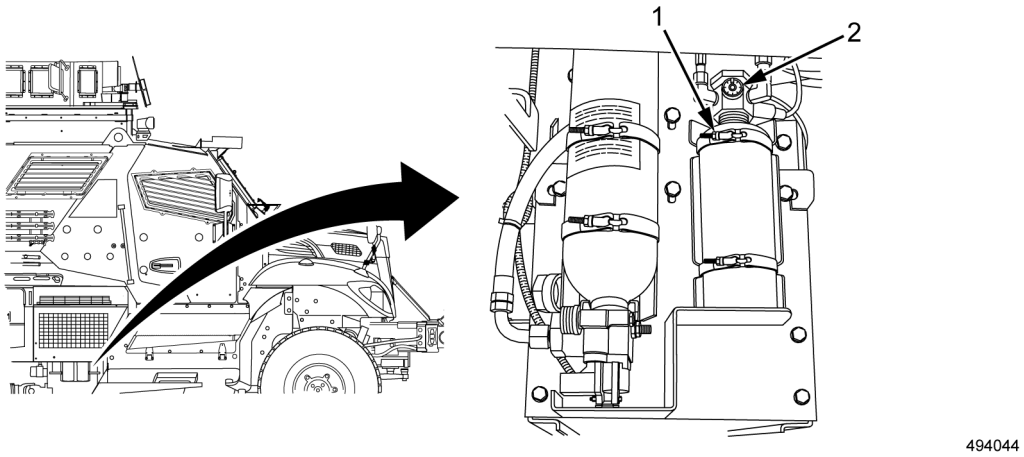


Figure 123. Exterior Commander Side FSS Extinguisher.

101	After	Exterior AFES Fire Extinguisher	**NOTE** The vehicle has one exterior AFES extinguisher. 1. Verify that fire extinguisher (Figure 124, Item 1) is mounted correctly on commander side of vehicle. 2. Check all bolts, nuts, and other fasteners on AFES extinguisher bracket for tightness.	AFES extinguisher is missing. AFES extinguisher not securely mounted.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Verify extinguisher pressure gauge (Figure 124, Item 2) meets minimum requirements for ambient temperature and pressure, according to the information from fire extinguisher label (Figure 125, Item 1).	Pressure gauge does not meet minimum requirement for ambient temperature and pressure.
			4. Inspect engine nozzles, hoses, and fittings for obstructions, looseness or cracks. Check for missing nozzle caps. Refer to WP 0065, Emergency Operation - Automatic Fire Extinguishing System (AFES)/Fire Suppression System (FSS).	Nozzles are obstructed, or hoses are broken or cracked, fittings are loose, or caps are missing.

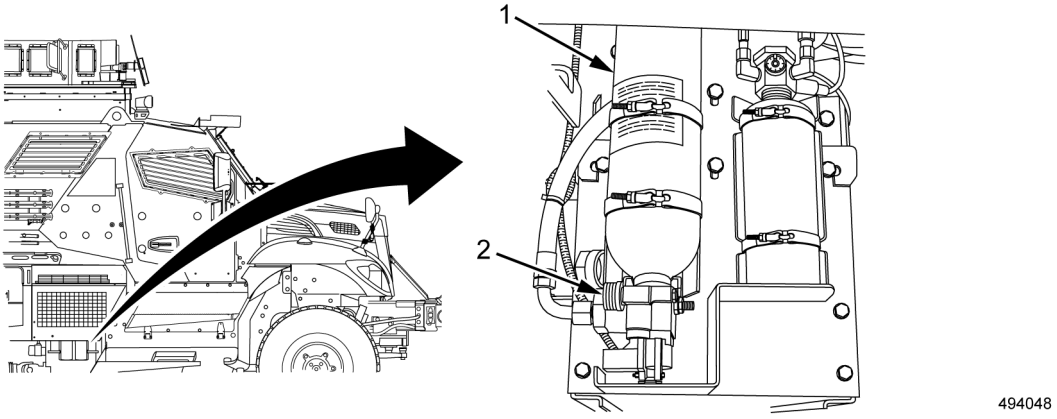


Figure 124. Exterior AFES Extinguisher.

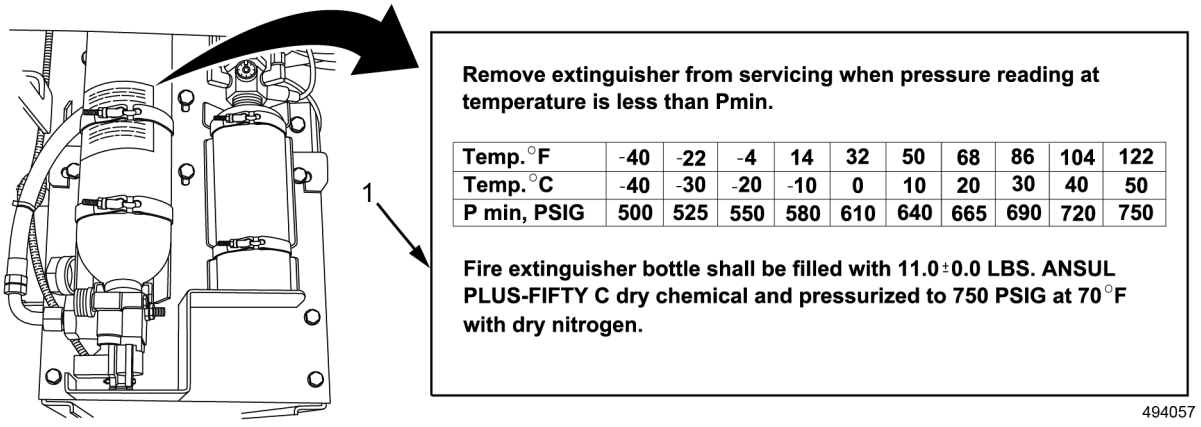
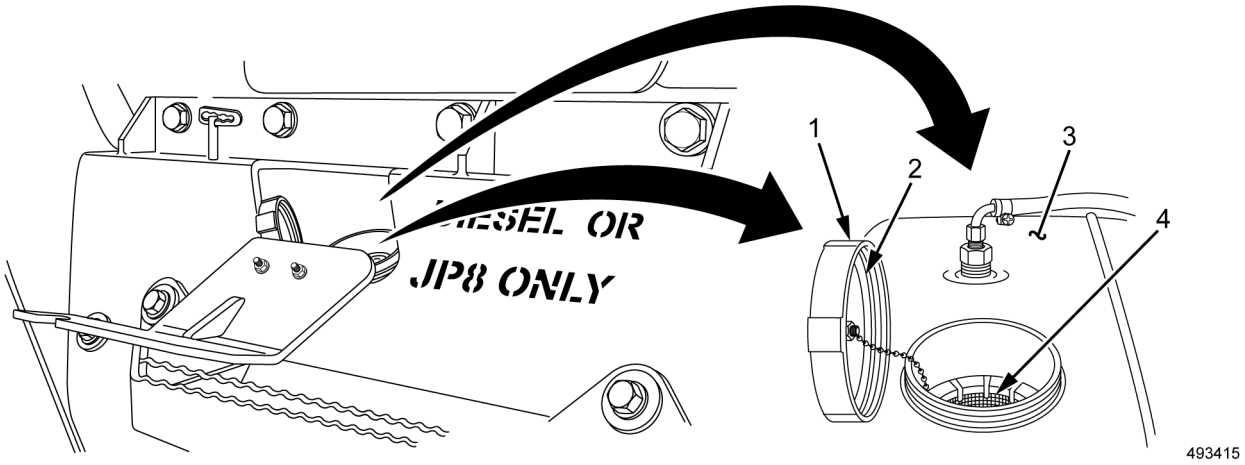
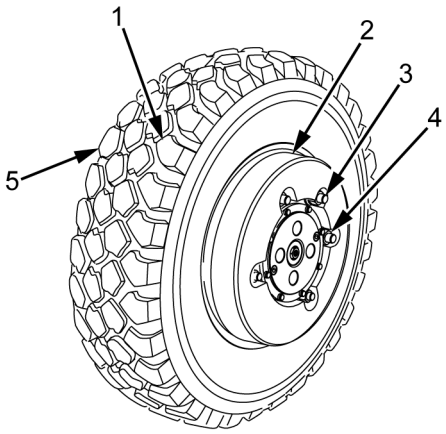
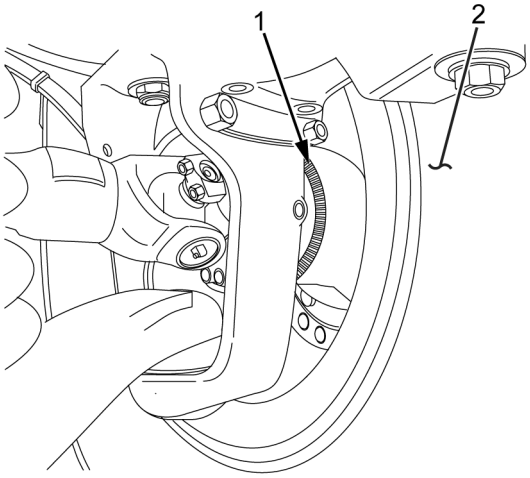

1
Remove extinguisher from servicing when pressure reading at temperature is less than Pmin.
Temp.°F -40 -22 -4 14 32 50 68 86 104 122
Temp.°C -40 -30 -20 -10 0 10 20 30 40 50
P min, PSIG 500 525 550 580 610 640 665 690 720 750
Fire extinguisher bottle shall be filled with 11.0±0.0 LBS. ANSUL PLUS-FIFTY C dry chemical and pressurized to 750 PSIG at 70°F with dry nitrogen.
494057

Figure 125. Exterior AFES Extinguisher.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
102	After	Fuel Tank Cap	**WARNING** Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel. **NOTE** Exterior fuel tank access armor door must be opened. Refer to WP 0034, Operation Under Usual Conditions - Vehicle Fueling Operation. 1. Check for missing or damaged fuel tank cap (Figure 126, Item 1). 2. Twist fuel tank cap (Figure 126, Item 1) counterclockwise until free from fuel tank (Figure 126, Item 3). 3. Remove fuel tank cap (Figure 126, Item 1) from fuel tank (Figure 126, Item 3). 4. Check that rubber seal (Figure 126, Item 2) in fuel tank cap (Figure 126, Item 1) is present and is not damaged. 5. Check fuel tank strainer (Figure 126, Item 4) for dirt and debris. a. Remove any visible debris. 6. Install fuel tank cap (Figure 126, Item 1) on fuel tank (Figure 126, Item 3). 7. Twist fuel tank cap (Figure 126, Item 1) clockwise until secured on fuel tank (Figure 126, Item 3).	Fuel tank cap is missing or damaged. Fuel tank strainer is visibly clogged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Figure 126. Fuel Tank Cap and Strainer.	
103	After	Wheels and Tires	**NOTE** Driver side front tire shown; others similar.	
			1. Visually inspect for low or flat tires (Figure 127, Item 5). If tire is low, inflate to appropriate tire air pressure. Refer to WP 0097, Tire Inflation Procedure.	Any tire does not maintain operational tire air pressure.
			2. Check tread depth (Figure 127, Item 1), and note if tread is evenly worn.	Any tire has unevenly worn tread or tread depth less than 1/8 in. (3.2 mm).
			3. Check tires (Figure 127, Item 5) for cuts, gouges, cracks, or other damage.	Any tire has wear or damage that allows ply or belt material to be exposed through tread or sidewall. Any tire has tread or sidewall separation.
			4. Check CTIS covers (Figure 127, Item 2) for cuts, gouges, cracks, or other damage.	
			5. Check if valve caps (Figure 127, Item 3) and stems are missing, broken, or damaged.	
			6. Check visible wheel nuts and wheel studs (Figure 127, Item 4) for obvious looseness or damage. Notify Field Level Maintenance to torque loose wheel nuts as necessary.	Wheel nuts and/or wheel studs are missing, loose, or damaged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 127. Tires.	
			7. Check wheel hub oil seals (Figure 128, Item 2) on inside of wheels (Figure 128, Item 1) for leaks.	Class III oil leak.
			 Figure 128. Wheel Hub Oil Seal.	
104	After	Steering	**NOTE** Driver side shown; commander side similar. 1. Check that all nuts and bolts are secure. 2. Check drag link (Figure 129, Item 5) for cracks or bends. Check for missing or cracked drag link grease boots (Figure 129, Item 4).	Nuts or bolts are loose or missing. Drag link is bent or cracked, or drag link grease boot is cracked or missing.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Check pitman arms (Figure 129, Item 2) for cracks or bends.	Pitman arms are cracked or bent.
			4. Check steering gears (Figure 129, Item 1) for damage, cracks, and leaks.	Steering gears are damaged or cracked. Any Class III leak.
			5. Check steering column shaft (Figure 129, Item 3) for damage.	Evident damage.

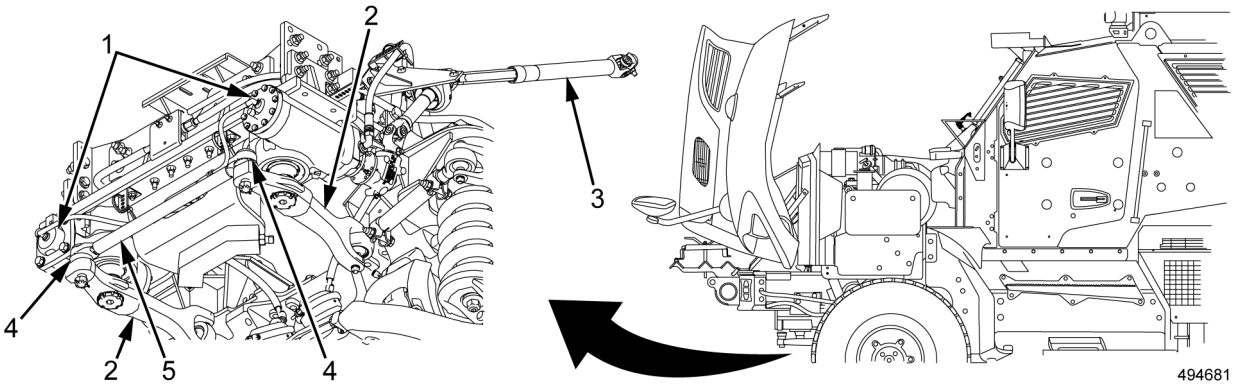
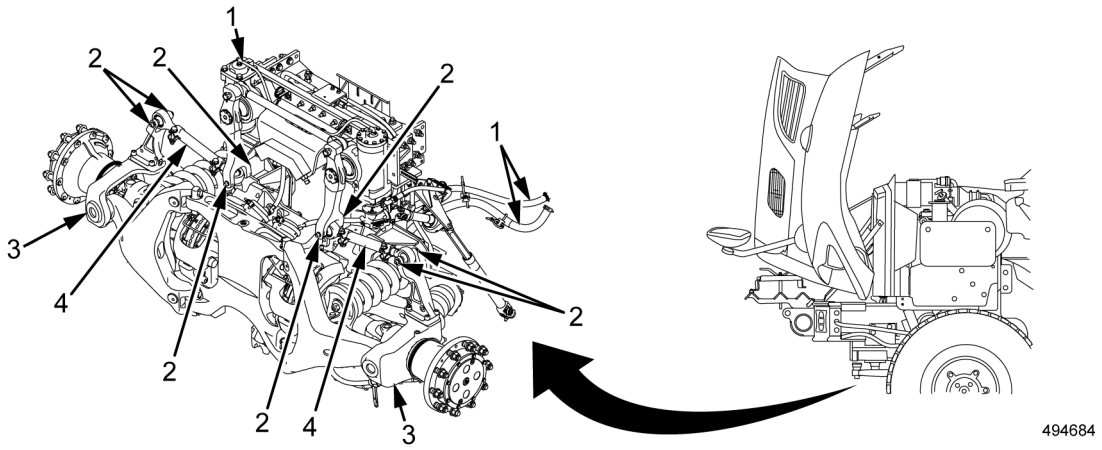
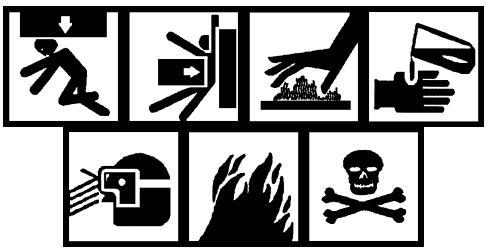
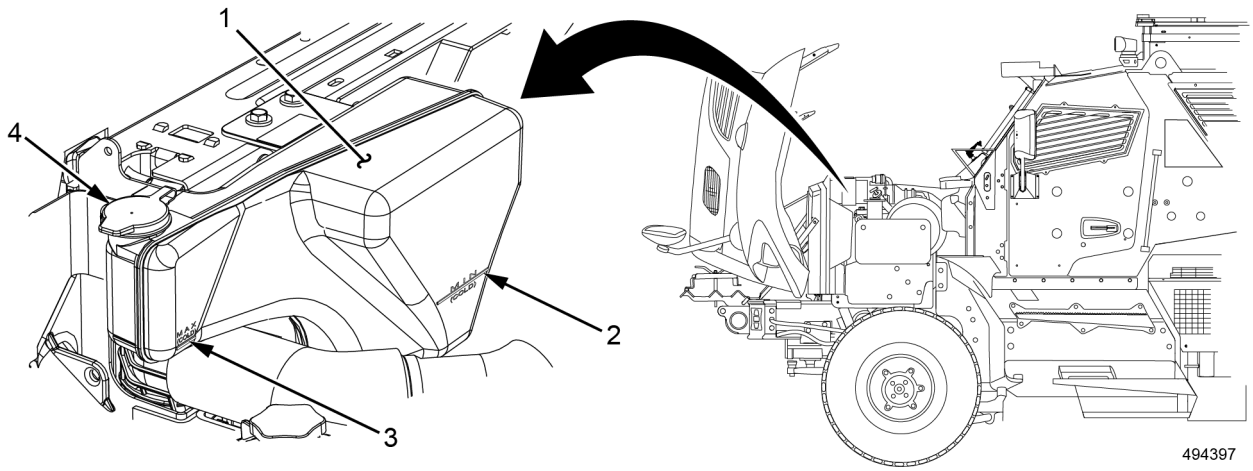
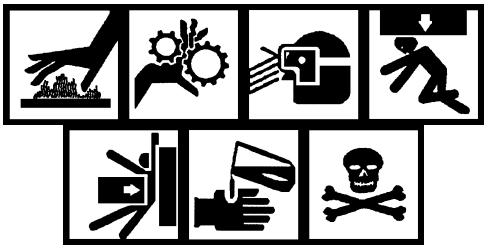


Figure 129. Steering Gears.

			6. Check hydraulic hoses (Figure 130, Item 1) and fittings for cracks, splits, and leaks.	Cracked, split, or damaged hydraulic lines/fittings. Any Class III leak.
			7. Check tie rods (Figure 130, Item 4) for bends, breaks, or excessive wear. Check for missing or cracked tie rod dust boots (Figure 130, Item 2).	Tie rods are bent, broken, or excessively worn. Cracked or missing tie rod dust boots.
			8. Check steering knuckles (Figure 130, Item 3) for bends or cracks.	Steering knuckles are bent or cracked.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 130. Tie Rods and Steering Knuckles.	
105	After	Radiator Overflow Reservoir Level	**WARNING**  Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning or pinching personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. Ensure all personnel stay clear of the radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.	
			CAUTION Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment.	
			Do not overfill radiator overflow reservoir. Failure to comply may result in damage to equipment.	
			1. Inspect radiator overflow reservoir (Figure 131, Item 1) and cap (Figure 131, Item 4) for damage and leakage.	Radiator overflow reservoir or cap is missing or damaged enough to allow leakage.
			2. Inspect coolant level in radiator overflow reservoir (Figure 131, Item 1) when engine is cold. Check level is between MIN (COLD) (Figure 131, Item 2) and MAX (COLD) (Figure 131, Item 3) marks. Refer to WP 0093, Coolant Service.	Any Class III leak exists or radiator overflow reservoir is empty.
			a. If coolant level is below MIN (COLD), add 50/50 mixture of coolant and water to radiator overflow reservoir (Figure 131, Item 1).	Coolant level is below MIN (COLD).
			b. If coolant level is above MAX (COLD), notify Field Level Maintenance to drain coolant as necessary to bring coolant level to between MIN (COLD) and MAX (COLD) marks.	Coolant level is above MAX (COLD).

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 131. Radiator Overflow Reservoir.	
106	After	Transmission Oil Level (Hot Check)	**WARNING**  Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel. **CAUTION** Ensure vehicle is parked on a level surface with wheels chocked and parking brake set. Failure to comply may result in damage to equipment. Do not overfill transmission oil. Failure to comply may result in damage to equipment. **NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine running, and wheels chocked. Before performing the hot-check procedure, verify TRANS temperature gauge has reached 160 to 200°F (71 – 93°C), to ensure accurate reading and help prevent transmission damage. 1. Check that transmission oil dipstick (Figure 132, Item 1) is present and not damaged. 2. Check transmission oil level as follows: a. Shift to NEUTRAL (N) and allow the engine to remain at idle (500 to 800 rpm). b. Turn dipstick handle (Figure 132, Item 1) counterclockwise.	Dipstick is missing. If overfull or if vehicle has Class III leak.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			c. Remove transmission oil dipstick (Figure 132, Item 1) from fill tube (Figure 132, Item 2). d. Wipe transmission oil dipstick (Figure 133, Item 2) with clean rag. e. Insert transmission oil dipstick (Figure 133, Item 2) into fill tube (Figure 132, Item 2). f. Turn dipstick handle (Figure 132, Item 1) clockwise until snug. g. Perform steps b and c. Oil level should be within HOT bands (Figure , Item 1). h. If fluid level is within HOT bands (Figure 133, Item 1) on transmission oil dipstick (Figure 133, Item 2), transmission can be operated. i. If fluid level is below HOT bands, add fluid. Refer to WP 0096, Transmission Fluid Service. j. If fluid level is above HOT bands (Figure 133, Item 1), shut down engine. Notify Field Level Maintenance to drain fluid as necessary to bring fluid level to middle of HOT bands.	

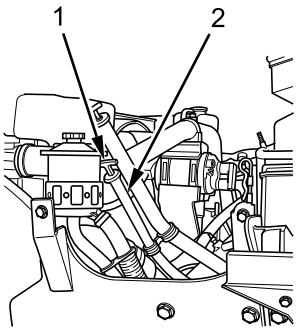
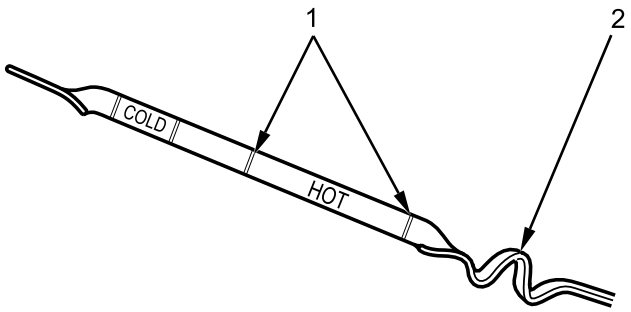
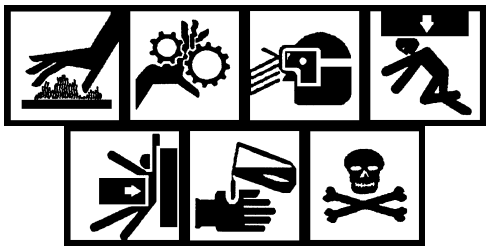


Figure 132. Transmission Fluid Dipstick.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 213246 Figure 133. Transmission Fluid Dipstick Hot Range.	
			k. Insert transmission oil dipstick (Figure 133, Item 2) into fill tube (Figure 132, Item 2). l. Turn dipstick handle (Figure 132, Item 1) clockwise until snug.	
107	After	Engine Oil Level	**WARNING**  Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning or pinching personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel. **CAUTION** Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment. Do not overfill engine oil. Failure to comply may result in damage to equipment. **NOTE** Rubber seal should fit completely in fill tube, and dipstick should not move freely. 1. Check that engine oil dipstick (Figure 134, Item 1) is present and not damaged. 2. Check engine oil level as follows: a. Turn engine oil dipstick handle (Figure 134, Item 1) counterclockwise. b. Remove engine oil dipstick (Figure 135, Item 1) from fill tube (Figure 134, Item 2). c. Wipe engine oil dipstick (Figure 135, Item 1) with clean rag. d. Insert engine oil dipstick (Figure 135, Item 1) into fill tube (Figure 134, Item 2) until fully seated.	Dipstick is missing or damaged. If overfull, or if vehicle has Class III leak.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			e. Remove engine oil dipstick (Figure 135, Item 1) from fill tube (Figure 134, Item 2). Oil level should be within OPERATING RANGE (Figure 134, Item 1) hash marks on the dipstick.	

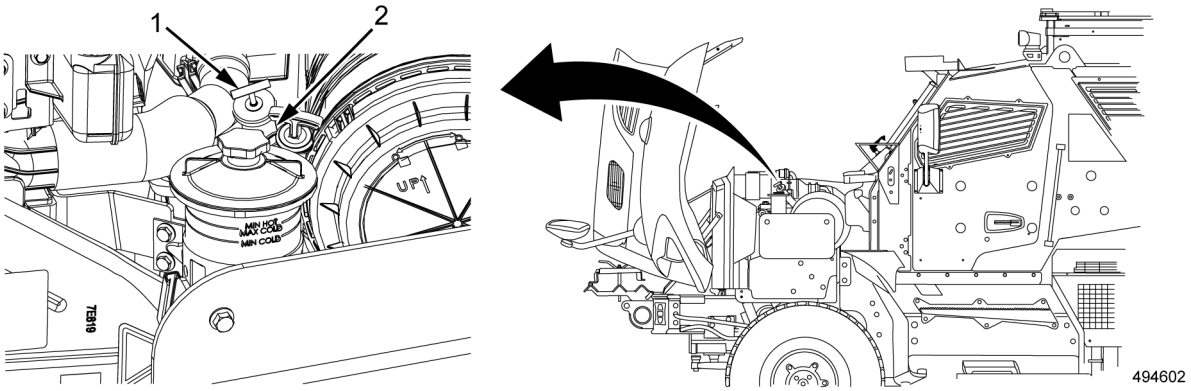
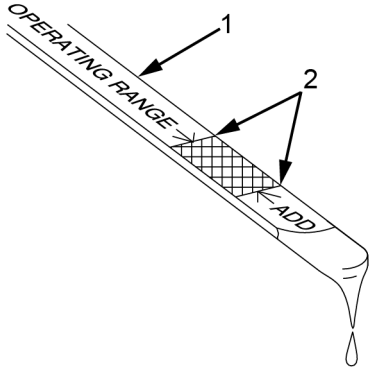
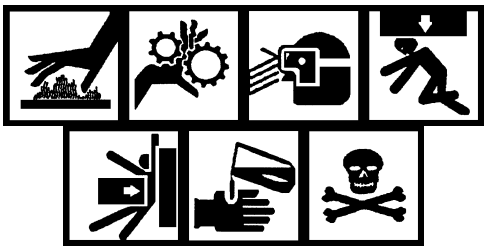


Figure 134. Engine Oil Dipstick.

			f. Wipe engine oil dipstick (Figure 135, Item 1) clean with rag and perform steps d and e to verify reading. g. If oil level is low, add engine oil. Refer to WP 0090, Engine Oil Service. h. If oil level is above OPERATING RANGE hash marks (Figure 135, Item 2) on the dipstick (Figure 135, Item 1), notify Field Level Maintenance to drain oil as necessary to bring oil level to middle of OPERATING RANGE hash marks. i. Install engine oil dipstick (Figure 135, Item 1) in fill tube (Figure 134, Item 2). j. Turn engine oil dipstick handle (Figure 134, Item 1) clockwise until snug.	Oil level is above OPERATING RANGE hash marks on dipstick.



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Figure 135. Engine Oil Dipstick Operating Range.	
108	After	Power Steering Fluid	**WARNING**  Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel. Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel. **CAUTION** Ensure vehicle is parked on a level surface with wheels chocked and parking brake set. Failure to comply may result in damage to equipment. Do not overfill power steering fluid reservoir. Failure to comply may result in damage to equipment.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Inspect power steering reservoir (Figure 136, Item 5) and cap (Figure 136, Item 1) for leaks, damage, and secure mounting.	Power steering reservoir or cap is missing, loose, or damaged enough to allow leakage.
			2. Inspect power steering reservoir hoses (Figure 136, Item 4) and connections (Figure 136, Item 3) for looseness, leaks, and damage.	Damage to components causing Class III leak.
			3. Inspect power steering fluid level as follows: a. Ensure that fluid is at the MAX COLD/MIN HOT level (Figure 136, Item 2) on reservoir (Figure 136, Item 5).	Reservoir is empty.

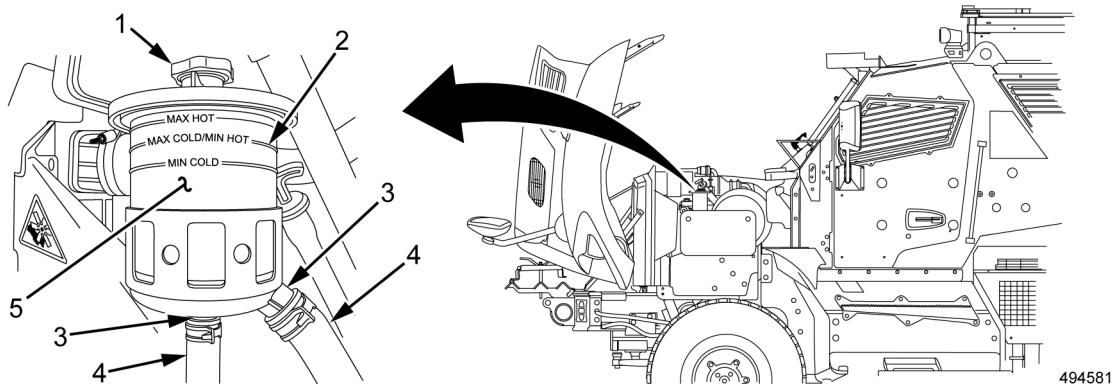


Figure 136. Power Steering Fluid Reservoir.

			b. If fluid is below MAX COLD/MIN HOT mark, add fluid. Refer to WP 0100, Power Steering Fluid Service. c. If fluid is above MAX COLD/MIN HOT mark, notify Field Level Maintenance to drain power steering fluid as necessary to bring fluid level to MAX COLD/MIN HOT level.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
109	After	Fuel/Water Separator	**WARNING** Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel. Do not fill fuel tank with engine running. Do not overfill fuel tank. Clean fuel spills immediately according to SOP. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage. **NOTE** Components removed from figure for clarity. 1. Check fuel/water separator (Figure 137, Item 1) and drain (Figure 137, Item 2) for leaks, damage, and loose connections.	Any fuel leak or broken drain valve.

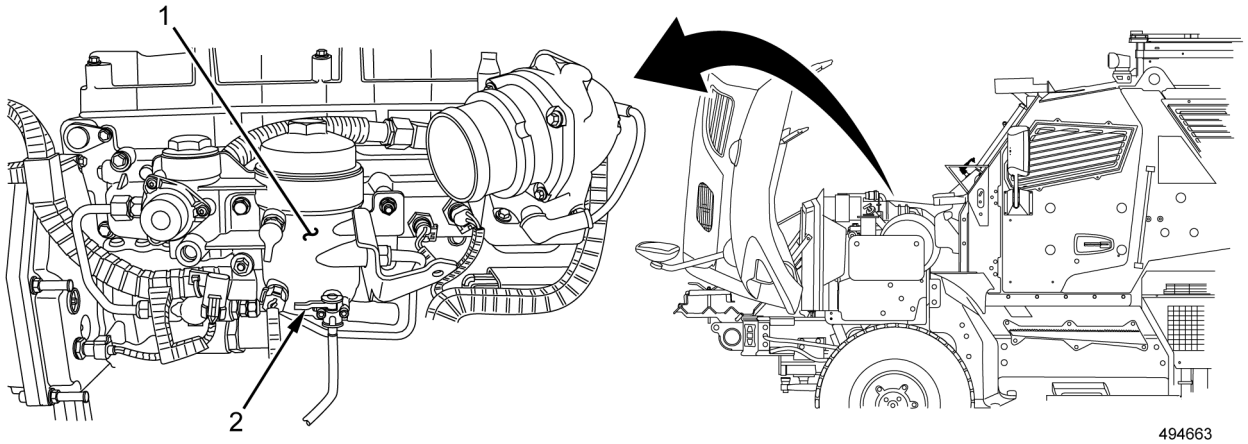
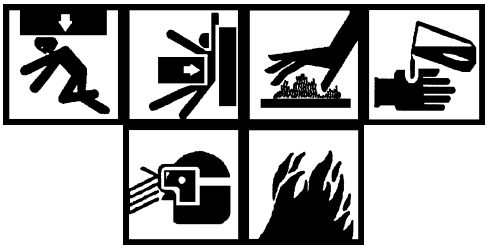
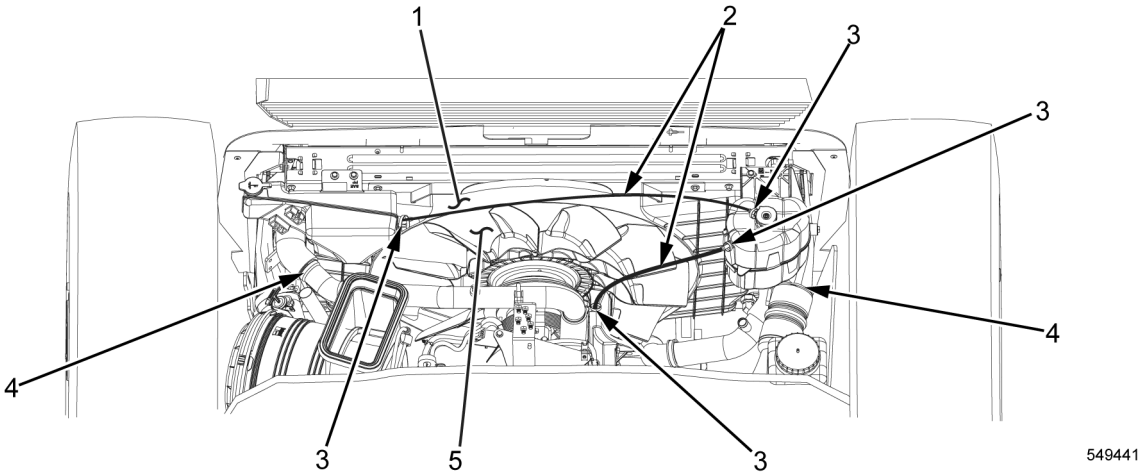
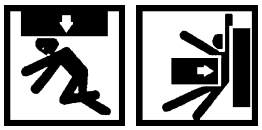
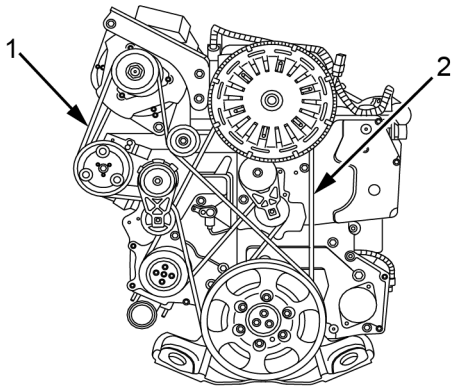
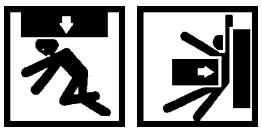


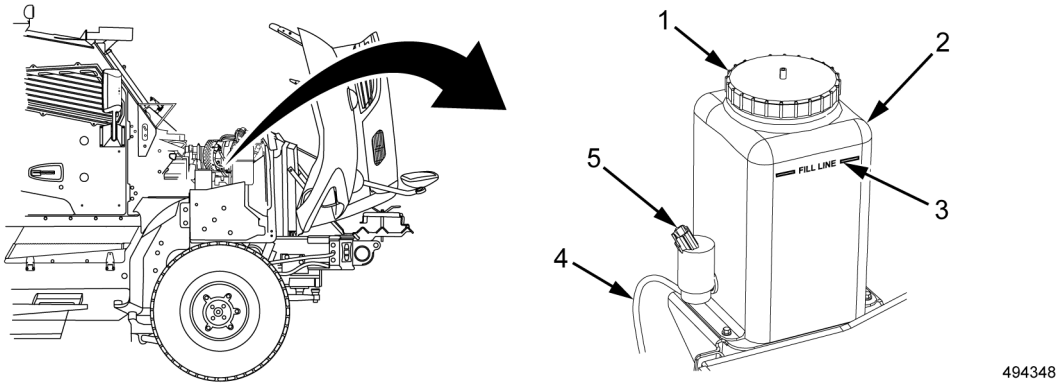
Figure 137. Fuel/Water Separator.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
110	After	Radiator and Charge Air Cooler (CAC)	**WARNING**  Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel. Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. Cooling system components become pressurized and extremely hot during normal operation. To prevent serious injury from hot coolant or scalding steam that escapes when removing radiator cap, radiator overflow cap, or deaeration tank pressure cap; ensure to allow engine to cool for 15 minutes, wrap a thick cloth around cap to be removed, loosen cap slowly one-quarter to one-half turn counterclockwise, and pause to allow pressure to release, and then continue to turn cap counterclockwise to remove. Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			Ensure all personnel stay clear of the radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel. **CAUTION** Ensure vehicle is parked on a level surface with wheels chocked and parking brake set. Failure to comply may result in damage to equipment.	
			1. Check radiator (Figure 138, Item 5) for damage, looseness, or dirt buildup.	Radiator damage exists that would hinder operation.
			2. Check radiator (Figure 138, Item 5), hoses (Figure 138, Item 2), and connections (Figure 138, Item 3) for leaks.	Any leaks are present.
			3. Inspect CAC system (Figure 138, Item 4) mounting-to-radiator connections for cracks. Check hoses (Figure 138, Item 2) for weakness, cracks, and ruptured/worn areas. Check connections (Figure 138, Item 3) for tightness and signs of corrosion or rust.	Damage to CAC system results in unfiltered air entering system.
			4. Inspect fan shroud (Figure 138, Item 1) for missing, damaged, loose, leaking, dirty, or corroded components that would impair operation.	Any damage that prevents operation.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
				
			Figure 138. Fan Shroud.	
111	After	Serpentine Belts	**WARNING**  Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Failure to comply may result in serious injury or death to personnel. 1. Check serpentine belts (Figure 139, Item 1 and 2) for frays, cracks, loose fibers, and visible signs of wear. 2. Press serpentine belts (Figure 139, Item 1 and 2) to check tightness. Serpentine belts should turn no more than 1/4–turn loose or have more than 1/2 in. (12.7 mm) play when pressed.	Serpentine belts are frayed, cracked, or worn.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 494393 Figure 139. Serpentine Belts.	
112	After	Windshield Washer Fluid	**WARNING**  Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Failure to comply may result in serious injury or death to personnel. 1. Inspect windshield washer fluid reservoir (Figure 140, Item 2) and cap (Figure 140, Item 1) for leaks, damage, and secure mounting. Refer to AR 385-10. 2. Inspect windshield washer fluid reservoir hoses (Figure 140, Item 4) and connections (Figure 140, Item 5) for looseness, leaks, and damage. 3. Check windshield washer fluid reservoir fluid level as follows: a. Visually confirm windshield washer fluid reservoir fluid level is up to the FILL LINE mark (Figure 140, Item 3).	Class III leak.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 140. Windshield Washer Fluid Reservoir.	
			b. If low, add fluid. Refer to WP 0101, Windshield Washer Service.	
113	Weekly	Cabin Interior	**NOTE** Cabin interior refers to cab and passenger compartments. The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch OFF, ignition switch OFF, and wheels chocked. 1. Inspect cabin interior for any loose or missing bolts. 2. Inspect for missing, damaged, loose, leaking, dirty, or corroded components that would impair operation. 3. Check visible compartment floors for cracks or twists. 4. Check roof insulation panels for missing or damaged insulation.	Cabin has any loose or missing bolts. Any damage that prevents operation. Compartment floors have cracks or twists. Insulation panels are damaged or missing.
114	Weekly	RACC	**NOTE** Driver side shown; commander side similar. 1. Inspect RACC (Figure 141, Item 1) retaining pins (Figure 141, Item 2) and hinge pins (Figure 141, Item 3) for missing or damaged components.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

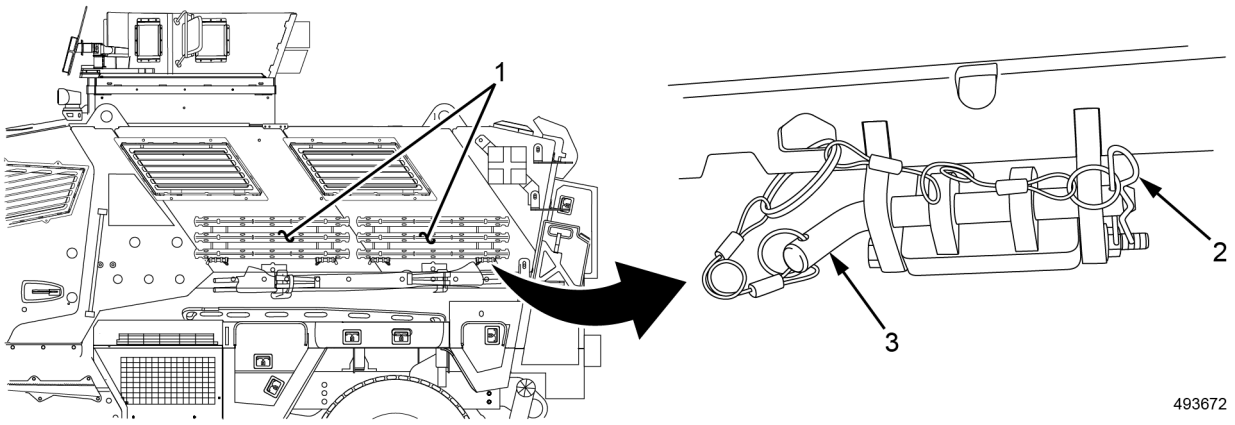


Figure 141. RACC.

			2. Inspect two front tow rack brackets (Figure 142, Item 1) for missing or damaged components. 3. Inspect two RACC hinge pins (Figure 142, Item 2) and rack (Figure 142, Item 3) for missing or damaged components.	

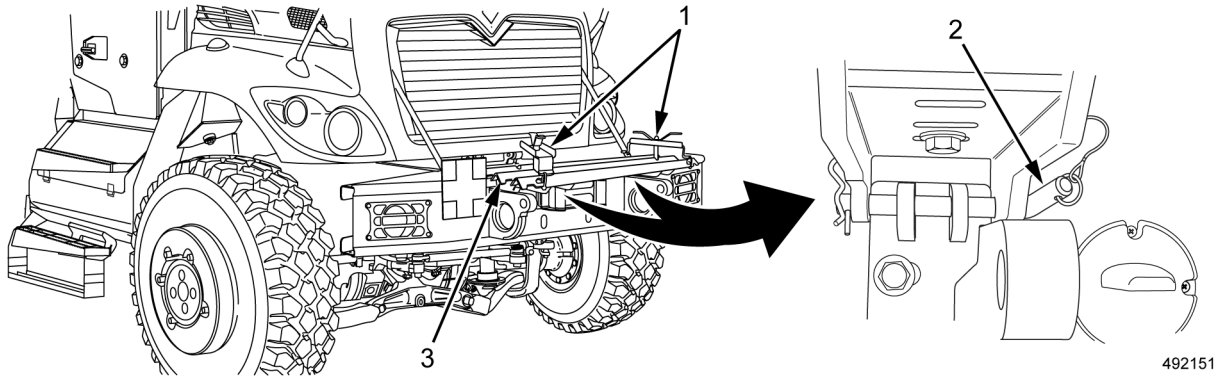


Figure 142. Front RACC.

115	Weekly	External Stowage Boxes	**NOTE** Driver side shown; commander side similar. There are eight side stowage boxes, four on each side of vehicle. One box on each side has two doors. There is one external stowage box with three access doors on the rear door/ramp.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Check side stowage boxes (Figure 143, Item 1) for damage.	Any damage that prevents doors from opening and closing.

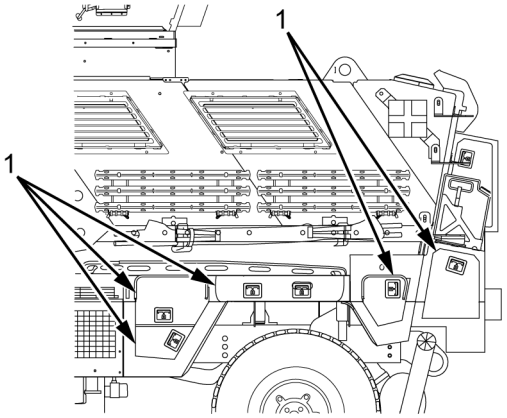


Figure 143. Driver Side External Stowage Box.

			2. Inspect rear external stowage box (Figure 144, Item 3) on rear of door/ramp (Figure 144, Item 2) for damage. 3. Check access door (Figure 144, Item 6), door seal (Figure 144, Item 1), hinges (Figure 144, Item 5), pins (Figure 144, Item 4), handles (Figure 144, Item 8) and mounting hardware (Figure 144, Item 7) for missing or damaged components.	

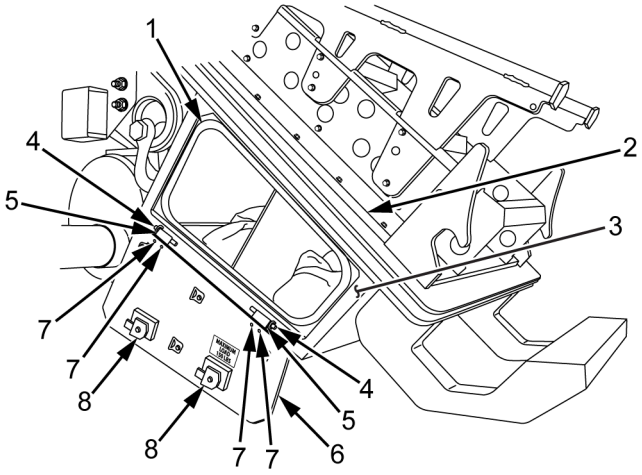
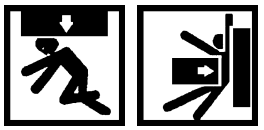


Figure 144. Rear External Stowage Box.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
116	Weekly	Exterior Battery Box Armor Door	**WARNING**  Exterior armor doors are heavy. Use caution when opening and closing exterior armor doors. Ensure that all body parts and gear are clear before closing exterior armor doors. Failure to comply may result in serious injury or death to personnel. Access door can swing free when exterior armor door is opened or closed. Ensure body parts are clear when lowering and raising exterior armor door. Failure to comply may result in injury to personnel. 1. Check battery box armor door mounting bolts (Figure 145, Item 1) and hinges (Figure 145, Item 2) for looseness or damage.	Mounting bolts or hinges are damaged.

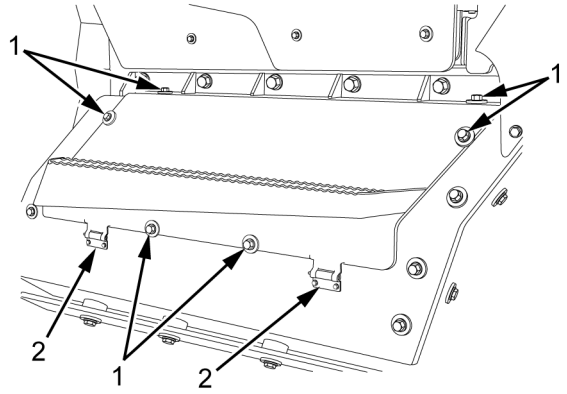
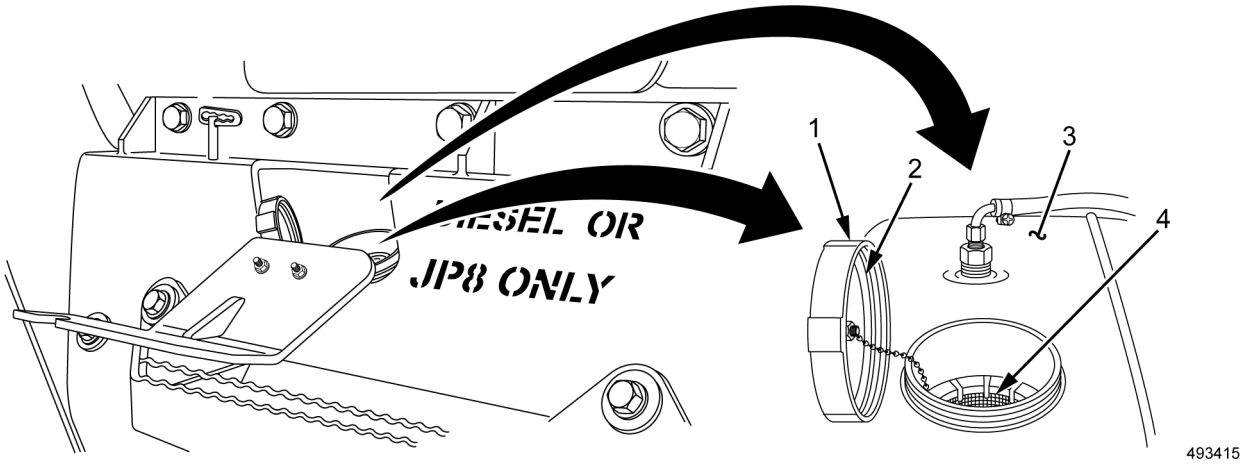
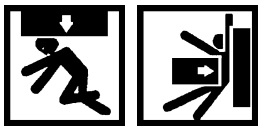
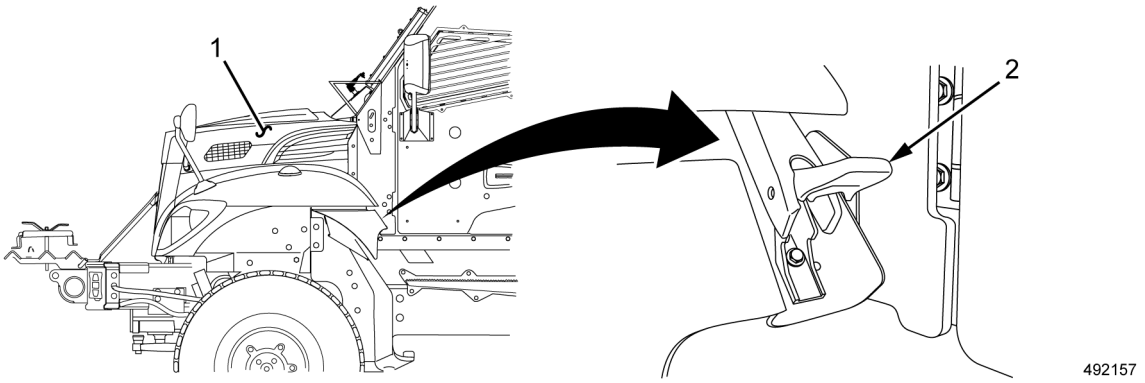
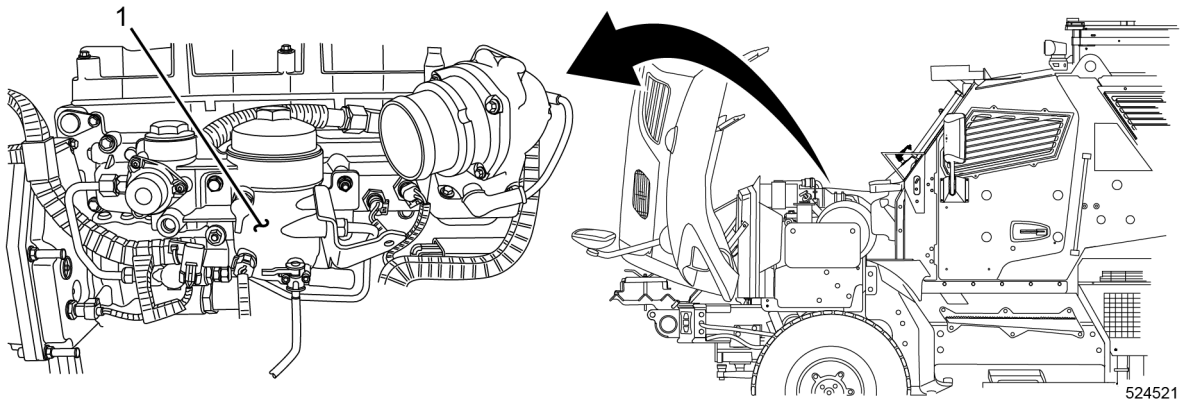
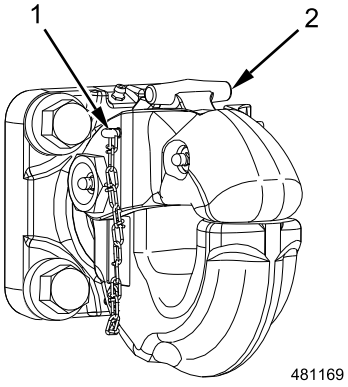


Figure 145. Exterior Battery Box Armor Door.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
117	Weekly	Fuel Tank Cap Seal and Strainer	**WARNING** Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel. **NOTE** Exterior fuel tank armor access door must be opened. Refer to WP 0034, Operation Under Usual Conditions - Vehicle Fueling Operation. 1. Check for missing or damaged fuel tank cap (Figure 146, Item 1). 2. Twist fuel tank cap (Figure 146, Item 1) counterclockwise until free from fuel tank (Figure 146, Item 3). 3. Remove fuel tank cap (Figure 146, Item 1) from fuel tank (Figure 146, Item 3). 4. Check that rubber seal (Figure 146, Item 2) in fuel tank cap (Figure 146, Item 1) is present and is not damaged. 5. Check fuel tank strainer (Figure 146, Item 4) for dirt and debris. a. Remove any visible debris. 6. Install fuel tank cap (Figure 146, Item 1) on fuel tank (Figure 146, Item 3). 7. Twist fuel tank cap (Figure 146, Item 1) clockwise until secured on fuel tank (Figure 146, Item 3).	Fuel tank cap is missing or damaged. Rubber seal is missing or damaged. Fuel tank strainer is visibly clogged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 146. Fuel Tank Cap and Strainer.	
118	Weekly	Hood	**WARNING**  Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel. **NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch OFF, ignition switch OFF, and wheels chocked. 1. Check hood (Figure 147, Item 1), hood latches (Figure 147, Item 2), hinges, and cables for cracks or any other damage.	Hood, hood latches, hinges, and cables are damaged. Hood fails to operate properly.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 147. Front Hood and Latches.	
119	Weekly	Air Filter	1. Check filter for damage, excessive oil, and dirt. Refer to WP 0091, Air Cleaner Assembly Service.	Filter is damaged, or AIR FILTER RESTRICTION gauge is in RED zone.
120	Weekly	Fuel/Water Separator	**WARNING** Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel. Do not fill fuel tank with engine running. Do not overfill fuel tank. Clean fuel spills immediately according to SOP. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and/or equipment or environmental damage. **NOTE** Components removed from figure for clarity. 1. Drain fuel/water separator (Figure 148, Item 1). Refer to WP 0092, Fuel/Water Separator Draining.	Metal shavings present in fuel.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			 Figure 148. Fuel/Water Separator.	
121	Weekly	Pintle Hook	1. Check pintle hook (Figure 149, Item 2) for secure mounting and proper operation. Check that safety latch engages hook lock. 2. Check that safety pin (Figure 149, Item 1) is secure and functional.	Pintle hook is not mounted securely or safety latch does not engage properly. Refer to AR 385-10.
			 Figure 149. Pintle Hook.	
122	Weekly	Gladhands	**NOTE** Front gladhands shown; rear gladhands similar. 1. Inspect two front gladhands (Figure 150, Item 2) for bent bracket, loose mounting, or damage.	Gladhands are bent, broken, or not mounted securely.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect front gladhand seals (Figure 150, Item 1) for cracks or damage. 3. Repeat steps 1 and 2 for rear gladhands.	

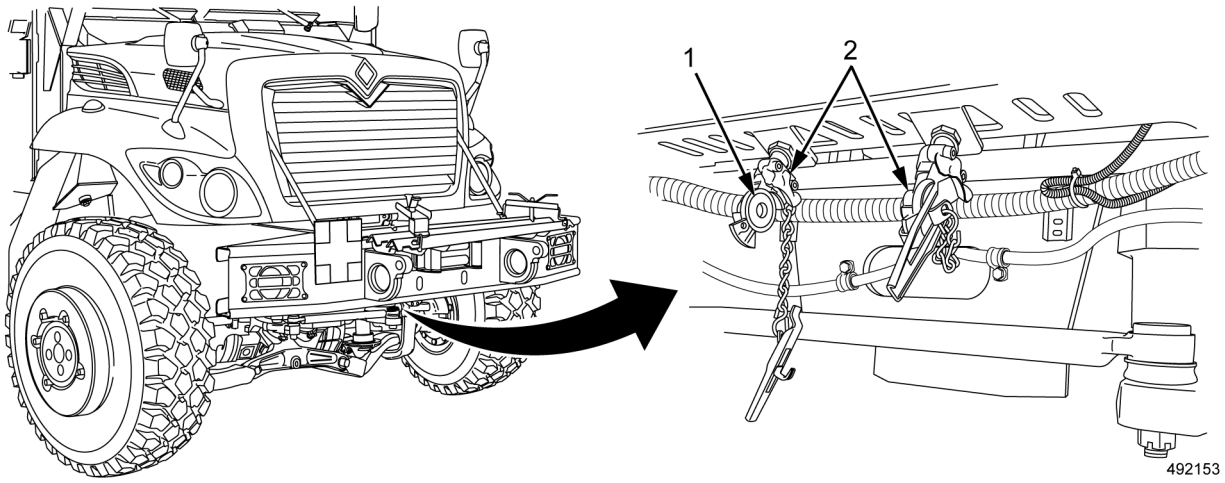


Figure 150. Gladhands.

123	Weekly	Exhaust System	**WARNING** Exhaust system components can be hot. Do not touch with bare hands or allow contact with other skin surface. Wear protective work gloves and long sleeves. Failure to comply may result in injury to personnel. 1. Check exhaust system for secure mounts, tight clamps and bolts, rust, damaged pipes, and any indication of an exhaust leak.	Any mount is broken, pipes are rusted through or damaged, or any indication of an exhaust leak.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
124	Weekly	Brakes	**WARNING** Air system is under pressure. Wear safety goggles and gloves. Do not disconnect any air system fitting. Hoses may whip and injure personnel, and air under pressure can penetrate skin. Failure to comply may result in serious injury or death to personnel. Check air brake system while vehicle is on a firm, level surface clear of all personnel, buildings, and equipment. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. **NOTE** Driver side shown; commander side similar. 1. Check front and rear brake hoses (Figure 151, Item 1) and (Figure 152, Item 1) for cracked, worn, or frayed hoses, and for secure couplings. 2. Check front and rear brake chambers (Figure 151, Item 5) and (Figure 152, Item 2) for cracks, rust, dents, secure mounting, and missing caging bolts and nuts. 3. Check brake calipers (Figure 151, Item 2) and (Figure 152, Item 5) for cracks, rust, dents, and secure mounting. 4. Check front and rear brake rotors (Figure 151, Item 3) and (Figure 152, Item 4) and pads (Figure 151, Item 4) and (Figure 152, Item 3) for cracks, rust, dents, and secure mounting.	Hoses are cracked, worn or frayed, couplings not secure. Brake chambers are cracked, loose, or rusted. Calipers are cracked, loose, or rusted. Front and rear brake rotors, calipers, or pads are cracked or damaged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

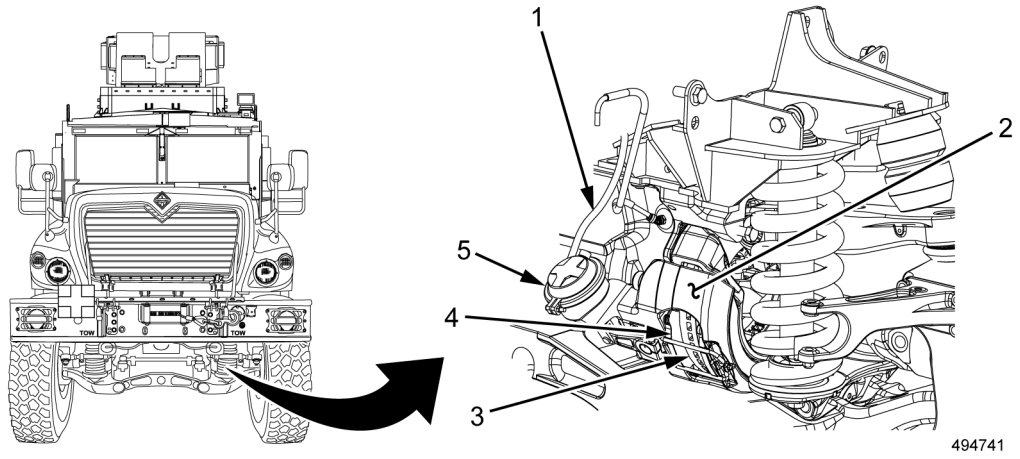


Figure 151. Driver Side Front Brakes.

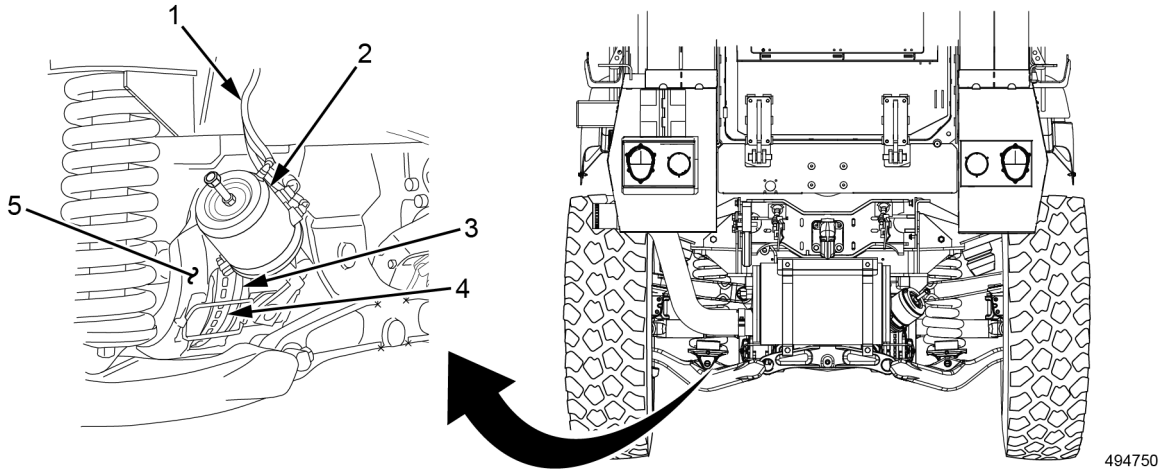
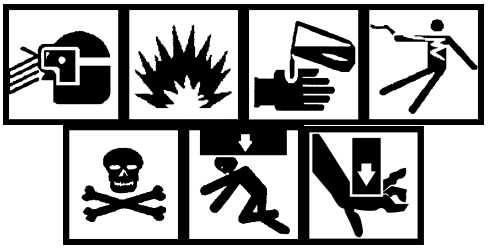


Figure 152. Driver Side Rear Brakes.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
125	Weekly	Batteries	**WARNING**  Turn MAIN POWER switch OFF prior to performing maintenance on battery or electrical system. Wear safety goggles and long sleeves when working on or near batteries. Batteries contain corrosive acid and can produce explosive gases. Batteries supply electrical current that can cause burns and electrical shock. Avoid leaning over or onto battery. Do not wear jewelry and do not smoke or have open flame or spark near battery. Do not allow tools to contact battery box or battery terminals. Dispose of or recycle used batteries according to SOP and waste management/battery recycling resources. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage. Battery acid must not contact eyes, skin, or clothing. If battery acid contacts eyes or skin, flush area with large amounts of water for 15 minutes and seek immediate medical care. If swallowed, do not induce vomiting. Drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention. Failure to comply may result in serious injury or death to personnel. **NOTE** Exterior battery box armor door must be opened. Refer to WP 0098, Exterior Battery Box Armor Door Open and Close.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			1. Check terminals (Figure 153, Item 1) and clamps, battery tray, and holddown rods (Figure 153, Item 2) and batteries (Figure 153, Item 3) for secure mounting.	One or more batteries is missing, damaged, or leaking; terminal or cables is loose, corroded; holddowns or batteries are not secure.
			2. Check batteries (Figure 153, Item 3) for any leaks or cracks.	Batteries are cracked or leaking.
			3. Check batteries (Figure 153, Item 3) for swelling or deformation.	Batteries are swollen or deformed.

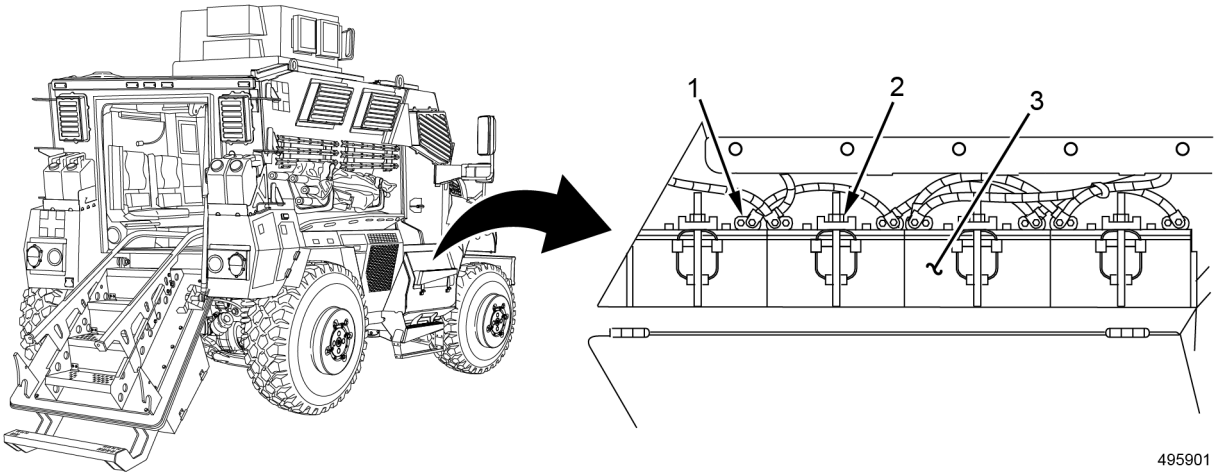


Figure 153. Batteries.

126	Weekly	Suspension	**NOTE** Shock absorbers may have a thin film of oil on the outer surface due to a normal condition known as misting. Misting is not considered a leak and will not be evident as a stream of fluid. Driver side front shown; others similar. 1. Check for missing, broken, or loose bolts; missing or damaged bushings; and broken or loose mounting parts. 2. Check shock absorbers (Figure 154, Item 1) for leaks and damage.	Any missing, broken, or damaged mounting parts. Any Class III leak.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			3. Inspect rubber bump stops (Figure 154, Item 2) and coil springs (Figure 154, Item 3) for damage.	Rubber bump stops are missing or damaged. Coil springs are broken.

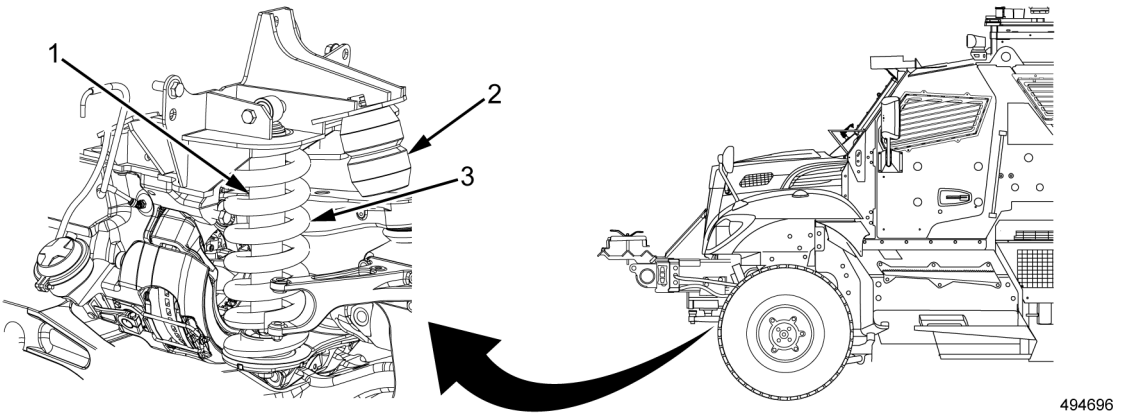


Figure 154. Shock Absorber, Coil Spring, and Bump Stop.

			4. Inspect upper and lower control arms (Figure 155, Item 1 and 2) for cracks, bends, or obvious damage.	Control arms are broken, damaged, or missing mounting parts.
			5. Inspect front sway bar (Figure 155, Item 4) and sway bar end links (Figure 155, Item 3) for cracks, bends, or obvious damage.	Sway bar or end links are broken, damaged, or missing mounting parts.

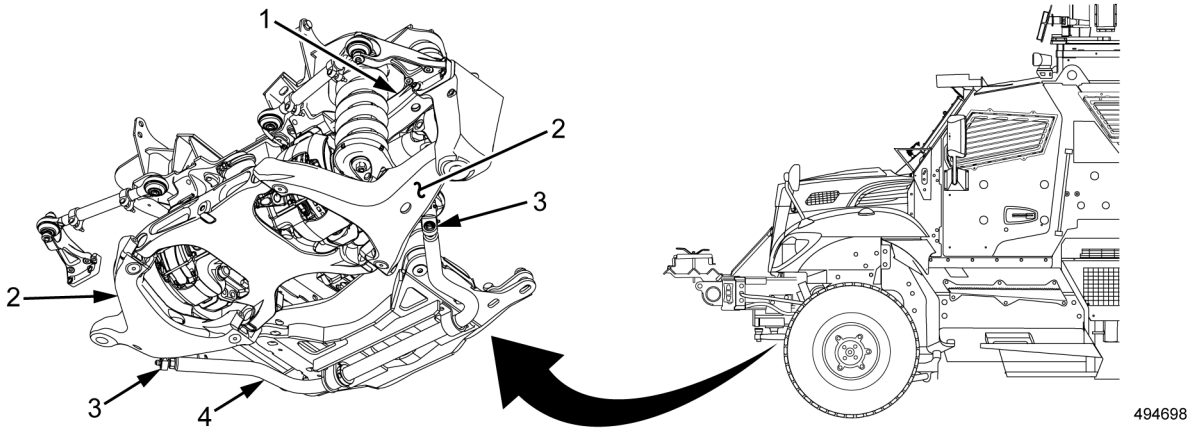


Figure 155. Control Arms, Sway Bar and End Links.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
127	Weekly	Brakes	**WARNING** Air system is under pressure. Wear safety goggles and gloves. Do not disconnect any air system fitting. Hoses may whip and injure personnel, and air under pressure can penetrate skin. Failure to comply may result in serious injury or death to personnel. Check air brake system while vehicle is on a firm, level surface clear of all personnel, buildings, and equipment. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. **NOTE** Driver side shown; commander side similar. 1. Check front and rear pads (Figure 156, Item 1) thickness for presence of brake pad groove (Figure 156, Item 2).	One or more brake pad groove is no longer visible.
128	Monthly	Cabin Exterior	**NOTE** The following checks should be made with the transmission in NEUTRAL (N), parking brake set, engine OFF, MAIN POWER switch OFF, ignition switch OFF, and wheels chocked. 1. Inspect door hinge pins and fasteners for damage or misalignment.	Door will not close securely.

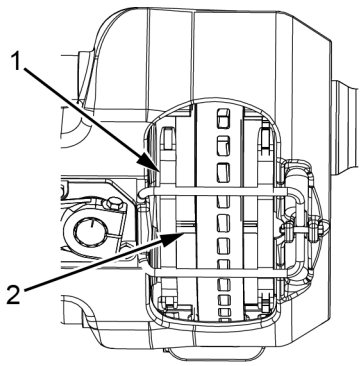


Figure 156. Brake Pad Groove.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Inspect vehicle frame for cracks and bent, broken, or missing crossmembers.	Frame is cracked, bent, broken, or missing crossmembers.
129	Monthly	110V Outlets and Inverter	**NOTE** Outlet and inverter checks should be made with the vehicle parked, engine OFF, MAIN POWER ON, ignition switch ON, and wheels chocked.	
			1. Inspect 110V outlets and wiring for frays, splits, loose mounting of outlets, or damage.	Any missing, damaged, or loose components that prevents operation.
			2. Turn power switch ON (Figure 157, Item 1) to operate 110V power inverter.	Any missing, damaged, or loose components that prevents operation.
			NOTE Perform Step 3 for each Ground Fault Circuit Interrupter (GFCI) button. One shown, Refer to WP 0020, Operation Under Usual Conditions - 110V Outlets and Power Inverter.	
			3. Inspect GFCI button. If Light Emitting Diode (LED) is lit, push RESET button (Figure 157, Item 2).	Any missing, damaged, or loose components that prevents operation.

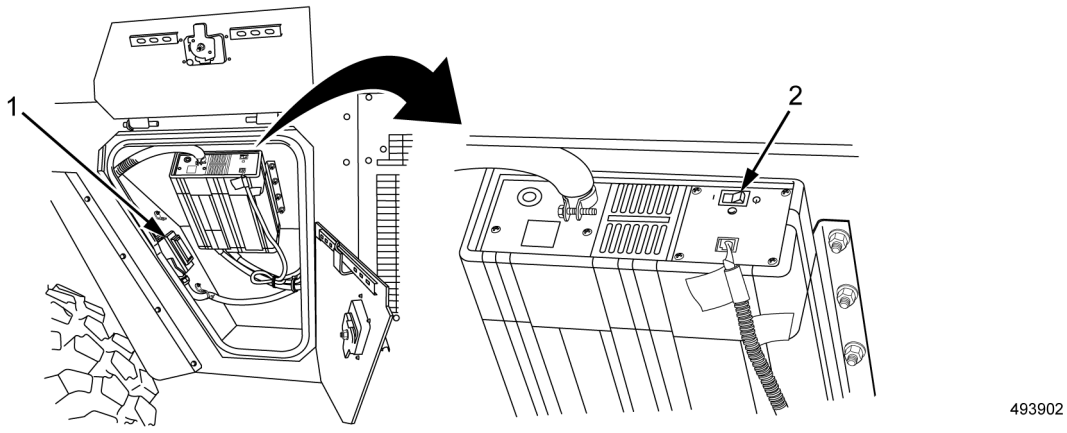


Figure 157. 110V Outlet and Inverter.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
130	Monthly	NATO Slave Start Connector	1. Inspect NATO slave start connector (Figure 158, Item 1) and wiring for corrosion, frays, splits, damage, and secure mounting.	Any missing, damaged, or loose components that prevents operation.

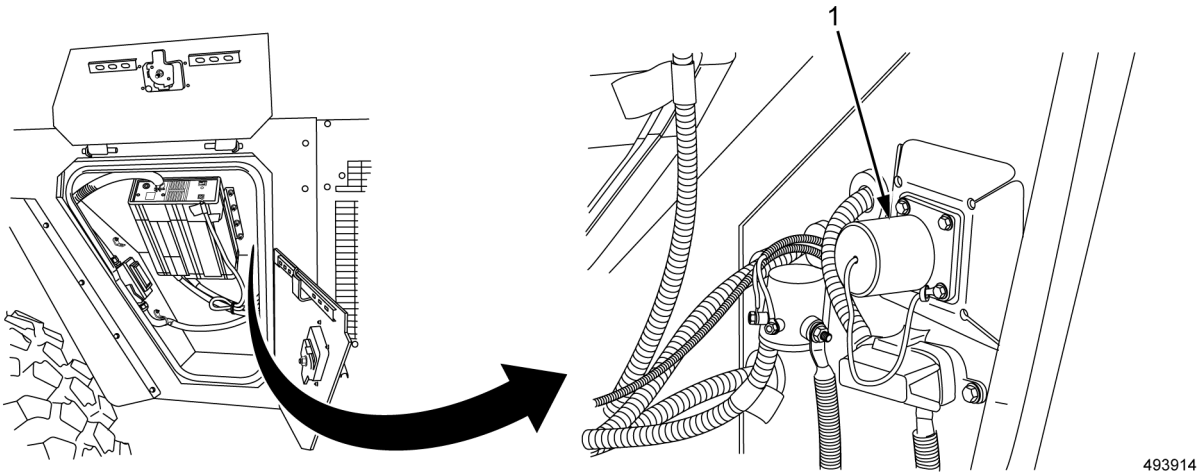
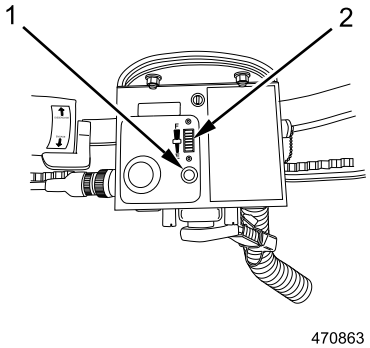


Figure 158. NATO Slave Plug Start Connector.

131	Monthly	Sliding Hatch (Roof) and Seal	1. Pull latch to unlock while pulling sliding hatch door rearward. Inspect sliding hatch locks in half and full open positions. Refer to WP 0023, Operation Under Usual Conditions - Sliding Hatch (Roof).	Access door will not open or latch in two positions.
			2. Inspect sliding hatch seal for tears, missing, or damage.	Any seal that is torn, missing, or damaged.
132	Monthly	ITDS	1. Check battery LED indicator (Figure 159, Item 2) using ITDS CHECK BATTERY push button (Figure 159, Item 1).	



ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

Figure 159. ITDS.

			2. Check turret for 360° clockwise and counterclockwise rotation (Figure 160, Item 1) . Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.	Turret sticks, binds, or does not traverse freely.

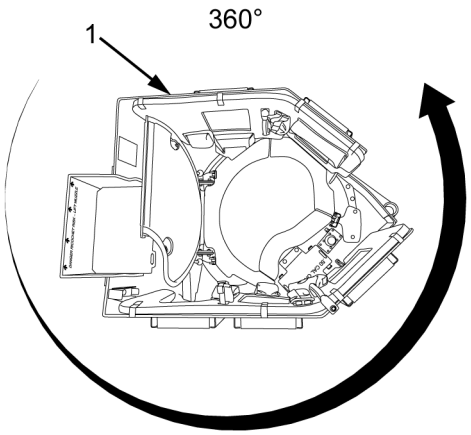


Figure 160. OGPK Turret.

134	Monthly	Wheels and Tires	1. Check visible wheel nuts and wheel studs (Figure 161, Item 1) for obvious looseness or damage. Notify Field Level Maintenance to torque loose wheel nuts as necessary.	Two or more wheel nuts and/or wheel studs in consecutive order are missing or damaged.

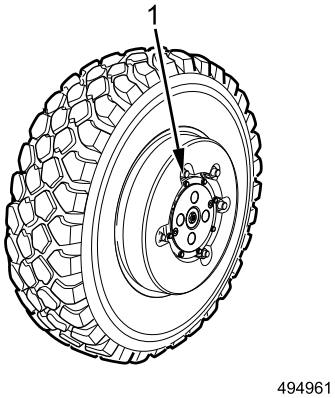


Figure 161. Tires.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			2. Check wheel hub seal (Figure 162, Item 2) on inside of wheel (Figure 162, Item 1) for leaks.	Class III oil leak.

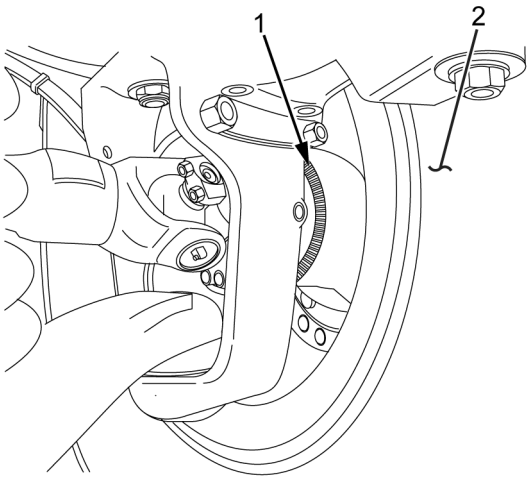


Figure 162. Wheel Hub Seal.

135	Monthly	Rear Propeller Shaft	1. Visually inspect rear propeller shaft (Figure 163, Item 1) for damage. 2. Inspect propeller shaft couplings (Figure 163, Item 2) for loose or missing parts.	Bent or cracked propeller shaft. Couplings not secure. Missing parts.

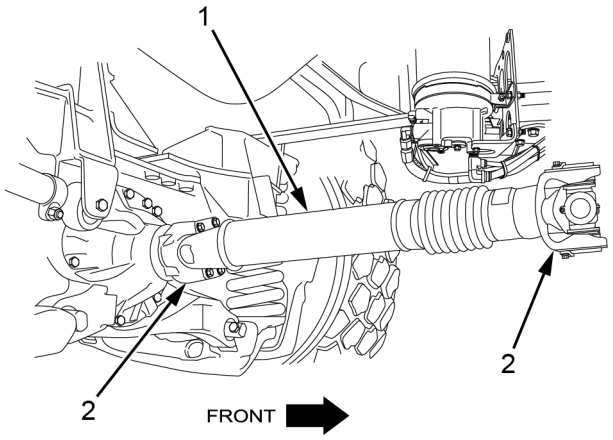


Figure 163. Rear Propeller Shaft.

			3. Visually inspect that driver side front axle breather (Figure 164, Item 1) is not damaged or clogged.	Front axle breather is damaged and cannot be unclogged.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:

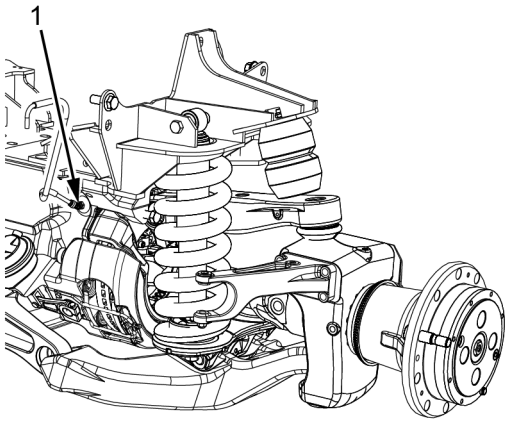


Figure 164. Driver Side Front Axle Breather.

			4. Visually inspect that commander side rear axle breather (Figure 165, Item 1) is not damaged.	Rear axle breather is damaged.

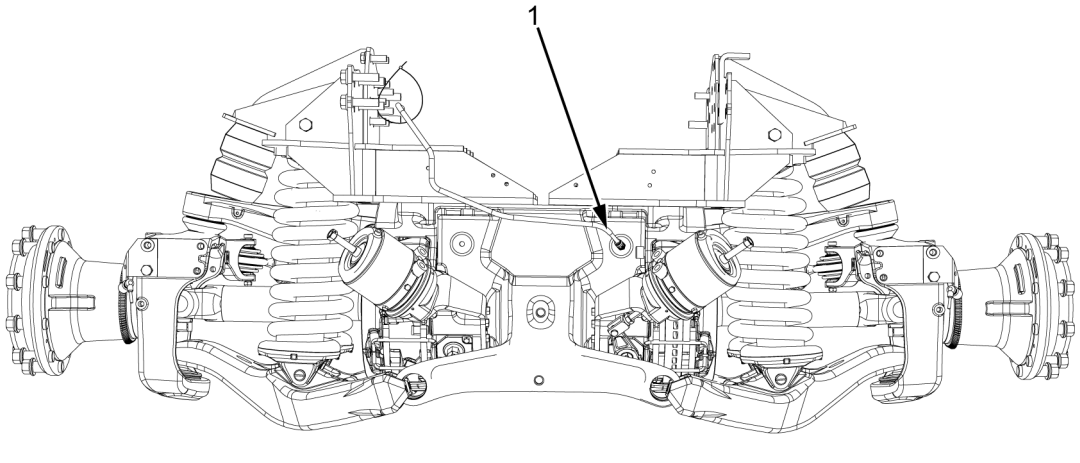


Figure 165. Commander Side Rear Axle Breather.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
136	Monthly	Fuel Fired Heater	**WARNING** Do not operate fuel fired heater or vehicle engine in an enclosed area without adequate ventilation. Failure to comply may result in serious injury to personnel. The diesel heater must be switched off before fuel tank on the vehicle is filled and when vehicle is not in use. Failure to comply may result in serious injury or death to personnel. **NOTE** The fuel fired heater operates independently of the engine to aid cold weather starting. 1. Operate fuel fired heater (Figure 166, Item 1). Refer to WP 0019, Operation Under Usual Conditions - Fuel Fired Heater.	Fuel fired heater emits fuel odor, leaking fuel, or coolant.

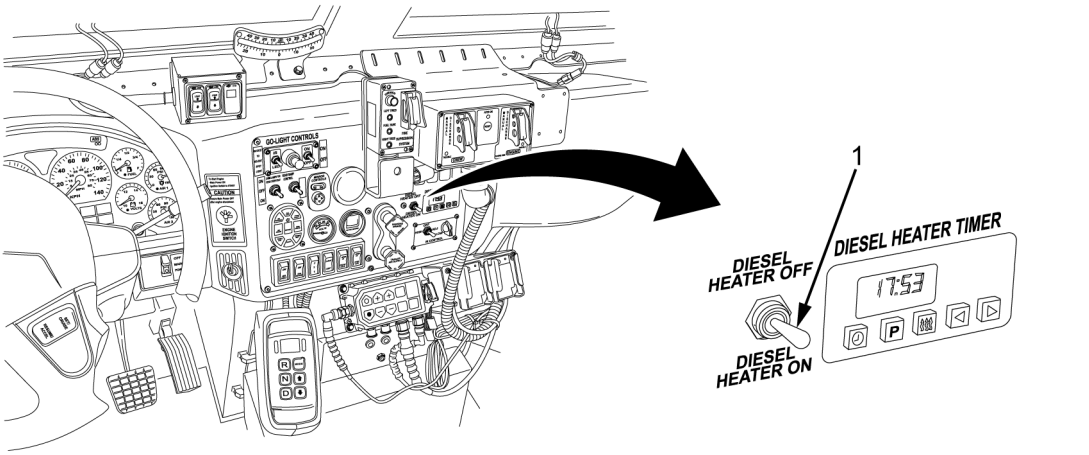


Figure 166. Fuel Fired Heater Controls.

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
137	Monthly	Winch and Remote Winch Connector	**WARNING** Cable is under tension when installed. Wear safety goggles and work gloves when handling. Do not wear loose clothing; it can get caught in cable as cable winds around spool drum. Failure to comply may result in serious injury or death to personnel. When operating winch, ensure there are no objects in path of cable or vehicle. Failure to comply may result in serious injury or death to personnel and/or damage to equipment. When operating winch, do not wear loose clothing; it can get caught in cable as cable winds around spool drum. Keep a minimum of five wraps of cable on drum when using winch. Fewer wraps may cause cable to pull free of drum and release load. Failure to comply may result in serious injury or death to personnel. Wear heavy, leather-palmed work gloves when handling cable. Never let moving cable slide through hands, even when wearing gloves. Cable can become frayed or contain broken wires. A broken wire could cut through gloves and injure hands. Failure to comply can result in serious injury to personnel. **NOTE** The following checks should be made with the vehicle parked and wheels chocked. 1. Check operation of winch. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation. 2. Inspect cable (Figure 167, Item 2) for frayed, kinked, or cut sections. 3. Inspect winch remote control connectors (Figure 167, Item 1) to ensure they are not bent or broken.	

ITEM NO.	INTERVAL	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
			4. Inspect remote winch connector (Figure 167, Item 1) for damaged wire harness, cap, or winch connector.	

Figure 167. Winch Cable and Control Connector.

END OF WORK PACKAGE

CREW MAINTENANCE

VEHICLE CLEANING

INITIAL SETUP:

Materials/Parts
- Bag, biohazard disposal (WP 0110, Item 3)
- Brush, bristle (WP 0110, Item 5)
- Cloth, cleaning (WP 0110, Item 7)
- Detergent, antibacterial (WP 0110, Item 8)
- Detergent, general purpose (WP 0110, Item 9)
- Gloves, leather (WP 0110, Item 10)
- Gloves, nitrile, large (WP 0110, Item 11)
- Gloves, patient exam (WP 0110, Item 12)
- Goggles, industrial (WP 0110, Item 13)
- Gown, isolation (WP 0110, Item 14)
- Mask, surgical (WP 0110, Item 20)
- Measure, liquid (WP 0110, Item 21)
- Pail, utility (WP 0110, Item 22)
- Rag, wiping (WP 0110, Item 25)
- Sodium hypochlorite solution (WP 0110, Item 26)
- Tape, pressure sensitive adhesive (WP 0110, Item 28)
- Wipes, disinfectant (WP 0110, Item 29)

References
- WP 0005
- WP 0007
- WP 0008
- WP 0018
- WP 0023
- WP 0025
- WP 0027
- WP 0033
- WP 0039
- WP 0040
- WP 0041
- WP 0062
- WP 0074

Equipment Condition
- Transmission set in NEUTRAL (N) (WP 0013)
- Parking brake set (WP 0013)
- Engine OFF (WP 0013)
- MAIN POWER switch OFF (WP 0013)
- Wheels chocked (WP 0013)

INTERIOR VEHICLE CLEANING

WARNING

Do not use compressed air exceeding 30 psi (207 kPa) for cleaning purposes. Use only with personal protective equipment, including safety goggles and gloves. Failure to comply could result in serious injury or death to personnel.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with Standard Operating Procedures (SOP). Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

The side doors and/or emergency hatch are heavy. Ensure that no one is standing directly beside them before opening and closing. Use caution when opening or closing side doors, especially when the vehicle is parked on an incline. Ensure emergency hatch is properly secured in both the open or closed position. Do not operate vehicle with emergency hatch open. Ensure that all body parts and gear are clear before closing side doors and/or emergency ramp. Failure to comply may result in injury or death to personnel.

Ensure no one is behind vehicle when lowering rear door/ramp. Use extreme caution when using emergency rear door/ramp release to ensure that no one is struck by door as it falls open. Sound horn before lowering rear door/ramp. Do not operate rear door/ramp while vehicle is in motion. Failure to comply may result in serious injury or death to personnel.

CAUTION

Do not use high-pressure washer, low pressure water hose, or caustic cleaning solutions on vehicle interior equipment. High pressure washing and/or caustic cleaning solutions could damage vehicle interior equipment. Hand wash only. Failure to comply may result in damage to equipment.

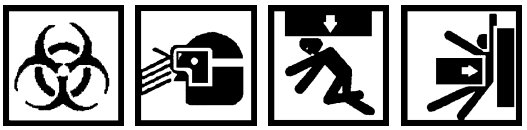
Do not use ammonia or any cleaning product that contains ammonia to clean transparent armor. Ammonia breaks down the bond between the inner and outer layers of transparent armor. Do not use aerosol window cleaners. The aerosol propellant may cause transparent armor separation. Failure to comply may result in damage to equipment.

1. Open side doors and rear door ramp. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation and WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Open and Close.
2. Cover all electrical outlets and connections with tape.
3. Clean interior transparent armor of mud, debris, dirt, and leaves using a clean, damp, soft rag.
4. Clean ceiling, walls, and seat cushions of mud, debris, dirt, and leaves using a clean, damp, soft rag.
5. Clean communications rack, gunner rack, passenger seats, gunner platform, gunner hatch, escape hatch, litter rails, litter trolleys, and floor of mud, debris, dirt, and leaves using a clean rag and a mild detergent and water solution.
6. Remove tape from all electrical outlets and connections.
7. Close side doors and rear door ramp. Refer to WP 0005, Operation Under Usual Conditions - Side Doors Operation and WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Open and Close.

END OF TASK

MEDICAL AREA CLEANING

WARNING



Organic and inorganic materials in the medical area may have blood, bodily fluids, or other material that cause illness or death in them. Be sure to wear appropriate protective clothing, including isolation gown, surgical mask, exam gloves, goggles, and overboot protectors (if available) when cleaning organic and inorganic materials from the medical area. Dispose of all materials in specified biohazard disposal bags in accordance with SOP. Failure to comply may result in severe injury or death top personnel.

To prevent falls from the sides, rear, or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

1. Identify areas that require cleaning. If it appears that cleaning of medical area will result in accumulation of waste liquid in hull area, notify Field Level Maintenance.
2. Refer to Table 1 to see which cleaning materials are acceptable for use on the item or surface to be cleaned.
3. Open rear door/ramp. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Open and Close.
4. Open sliding hatch (roof). Refer to WP 0023, Operation Under Usual Conditions - Sliding Hatch (Roof) Operation.
5. Open gunner hatch. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.
6. Open emergency hatch (roof). Refer to WP 0062, Emergency Operations - Emergency Hatch (Roof).
7. Raise, fold, or remove seats as necessary to access areas for cleaning. Refer to WP 0007, Operation Under Usual Conditions - Passenger Seat Adjustment; WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment; or WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Seats (BEATS) Operation.
8. If soiled, remove stored items or medical equipment from stored locations. Refer to WP 0074, On-Vehicle Equipment Load Plan.
9. If litter lift was used, lock litter lift in center position and pay out cable. Refer to WP 0039, Operation Under Usual Conditions - Litter Lifting and Securing Operations.
10. If necessary, move litter trolleys along rails to access areas for cleaning. Refer to WP 0040, Operation Under Usual Conditions - Litter Trolley and Rails Operations.

WARNING

Turn MAIN POWER switch and all auxiliary equipment OFF before unplugging equipment and performing cleaning and disinfecting operations. Failure to comply may result in serious injury or death to personnel.

NOTE

Location of equipment plugs in outlets in 110V power strips and routing of cables should be noted when removing plugs to aid in installation.

11. Unplug all equipment from outlets in 110V power strips before wiping outlet surfaces to remove organic or inorganic material from surface of outlets.
12. Install protective covers on outlets on 110V power strips. If protective caps are no longer present, use tape to cover outlets.

WARNING

Disinfectant wipes are flammable and may cause skin or eye irritation. Keep away from heat, sparks, and open flame. Avoid touching eyes and clothing with disinfectant wipes. If disinfectant wipes contact eyes, rinse gently for 15 minutes with water. After using disinfectant wipes, wash hands thoroughly. Disinfectant can be harmful if swallowed. Keep disinfectant wipes away from mouth. If swallowed, do not induce vomiting. Contact a physician if symptoms arise. Failure to comply may result in severe injury to personnel.

Disinfectant wipes are only meant for a single use. Do not reuse disinfectant wipes. Failure to comply may result in cross-contamination of medical area, resulting in severe injury or death to personnel.

CAUTION

Disinfectant wipes contain ammonia. Do not use disinfectant wipes to clean transparent armor. Ammonia breaks down the bond between the inner and outer layers of transparent armor. Failure to comply may result in damage to equipment.

Disinfectant wipes are only appropriate for cleaning and disinfecting hard, non-porous surfaces. Do not use on cloth surfaces, such as seat belts, seat covers, or stowage bags. Do not use disinfectant wipes on transport container or thermometer kit. Failure to comply may result in damage to equipment.

13. Using disinfectant wipes, clean all organic and inorganic materials from affected areas that can be cleaned using disinfectant wipes. Refer to Table 1.
14. Allow area to air-dry.
15. Repeat steps 13 and 14 to clean all organic and inorganic materials from surfaces using disinfectant wipes.

16. For items requiring cleaning with antibacterial detergent and water, mix antibacterial soap and water in utility pail. Refer to Table 1 for areas that can be cleaned using antibacterial detergent.
17. Wipe surface with cleaning cloth moistened with antibacterial detergent and water solution to remove organic and inorganic materials. Use bristle brush as necessary.
18. Wipe surface with dry cleaning cloth to remove excess moisture.
19. Repeat steps 16 through 18 as necessary to clean all organic and inorganic materials from surface using antibacterial soap and water solution.
20. Place used disinfectant wipes and cleaning cloths in marked biohazard disposal bag.
21. Dispose of antibacterial detergent and water solution in accordance with SOP.

WARNING

Sodium hypochlorite solution can cause severe burns to eyes, skin, and respiratory tract. Avoid contact with eyes, skin, and clothing. If solution contacts eyes or skin, immediately flush with water for 15 minutes. Get medical attention immediately. Use in well-ventilated areas. If breathing becomes difficult, move to fresh air. Do not swallow. If swallowed, do not induce vomiting. Drink at least one quart of water. Seek medical attention immediately. Failure to comply may result in severe injury or death to personnel.

22. Using utility pail and liquid measure, prepare a disinfecting solution of 99 parts water to one part sodium hypochlorite solution. Refer to Table 1 for areas that can be cleaned using sodium hypochlorite solution.

CAUTION

Chemicals in disinfecting solution can deteriorate litter lift cable. Do not use disinfecting solution on litter lift cable. Antibacterial detergent and water are sufficient to disinfect litter lift cable. Failure to comply may result in damage to equipment.

23. Using cleaning cloth moistened with disinfecting solution, wipe down areas cleaned with antibacterial soap and water.
24. Allow surfaces to air-dry.
25. Remove tape or protective plugs from outlets on auxiliary outlets. Place masking tape in marked biohazard disposal bag.
26. Remove surgical mask, isolation gown, overboot protectors (if worn), and patient exam gloves. Place all items in biohazard disposal bag.
27. Twist top of biohazard disposal bag and fold it over itself to form a gooseneck.
28. Secure top of biohazard disposal bag with masking tape.
29. Dispose of biohazard disposal bag in accordance with SOP.

CAUTION

Ensure medical area is completely dry before installing and plugging in any removed equipment.

30. If removed, secure medical equipment. Refer to WP 0041, Operation Under Usual Conditions - Securing Medical Equipment.
31. Route electrical cables and plug in all electrical equipment using notes from removal to aid in installation.
32. If moved, return litter trolleys to home position. Refer to WP 0040, Operation Under Usual Conditions - Litter Trolley and Rails Operations.

33. If cleaned, move litter lift to home position. Refer to WP 0039, Operation Under Usual Conditions - Litter Lifting and Securing Operations.
34. Return stored items to appropriate locations as necessary. Refer to WP 0074, On-Vehicle Equipment Load Plan.
35. Return seats to operation positions as necessary. Refer to WP 0007, Operation Under Usual Conditions - Passenger Seat Adjustment; WP 0008, Operation Under Usual Conditions - Medic Seat Adjustment; or WP 0025, Operation Under Usual Conditions - Blast Energy Attenuating Seats (BEATS) Operation.
36. Close emergency hatch. Refer to WP 0062, Emergency Operations - Emergency Hatch (Roof).
37. Close gunner hatch. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.
38. Close sliding hatch (roof). Refer to WP 0023, Operation Under Usual Conditions - Sliding Hatch (Roof) Operation.
39. Close rear door/ramp. Refer to WP 0018, Operation Under Usual Conditions - Rear Door/Ramp Open and Close.
40. Using disinfectant solution, wipe down goggles and outside of utility pail, and allow to air-dry.
41. Soak bristle brush, if used, in disinfecting solution, and allow to air-dry.
42. Dispose of disinfecting solution in accordance with SOP.

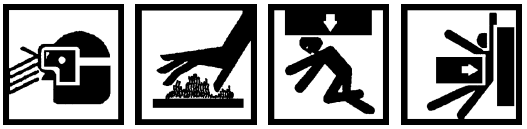
Table 1. Equipment and Acceptable Cleaning Materials.

Equipment	CLOTH/WATER MOISTENED	ANTIBACTERIAL SOAP	SODIUM HYPOCHLORITE	DISINFECTANT WIPES
Metal Surfaces	YES	YES	YES	YES
Painted Non-Porous Surfaces (Brackets, Pegboard)	YES	YES	YES	YES
Transparent Armor	YES	NO	NO	NO
110V Power Strips	NO	NO	NO	YES
Litter Lift	YES	YES	NO	YES
Backboard	YES	YES	NO	YES
Vital Signs Monitor	YES	YES	NO	YES
Blood Fluid Warmer	YES	YES	NO	YES
Suction Apparatus	YES	YES	NO	YES
O2 Concentrator	YES	YES	NO	YES
Nylon or Cloth Surfaces	YES	YES	NO	NO
Storage Bags	YES	YES	NO	NO
Transport Container	YES	YES	NO	NO
Thermometer Kit	YES	YES	NO	NO
Sked	YES	YES	NO	YES
Spine Splint	YES	YES	NO	YES

END OF TASK

ENGINE COMPARTMENT CLEANING

WARNING



Do not use compressed air exceeding 30 psi (207 kPa) for cleaning purposes. Use only with personal protective equipment, including safety goggles and gloves. Failure to comply could result in serious injury or death to personnel.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Hood requires two-person lift. Ensure there is adequate space in front of vehicle to open hood completely without pinning personnel between hood and another structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel.

Cooling system components become pressurized and extremely hot during normal operation. To prevent serious injury from hot coolant or scalding steam that escapes when removing radiator cap, radiator overflow cap, or deaeration cap; ensure to allow engine to cool for 15 minutes, wrap a thick cloth around cap to be removed, loosen cap slowly one-quarter to one-half turn counterclockwise, and pause to allow pressure to release, and then continue to turn cap counterclockwise to remove. Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

CAUTION

Do not use water pressure exceeding 30 psi (207 kPa) or caustic cleaning solutions on radiator heat exchanger fins and tubes. Using water pressure exceeding 30 psi (207 kPa) for washing and caustic cleaning solutions could damage radiator.

1. Open hood. Refer to WP 0033, Operation Under Usual Conditions - Hood Operation.
2. Clean radiator heat exchanger fins of mud, debris, dirt, and leaves using a water hose.
3. Clean charge air cooler of mud, debris, dirt, and leaves using a water hose.
4. Clean fan condensers of mud, debris, dirt, and leaves using a water hose.
5. Clean engine of mud, debris, dirt, and leaves using a water hose.
6. Close hood. Refer to WP 0033, Operation Under Usual Conditions - Hood Operation.

END OF TASK

EXTERIOR VEHICLE CLEANING

WARNING

Do not use compressed air exceeding 30 psi (207 kPa) for cleaning purposes. Use only with personal protective equipment, including safety goggles and gloves. Failure to comply could result in serious injury or death to personnel.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

To prevent falls from the sides, rear or top of the vehicle, personnel should always maintain three points of contact when climbing in, out, and on the vehicle. Use ladder during maintenance, as applicable. Failure to comply may result in injury to personnel.

Anti-lock Brake System (ABS) wheel sensors and brake caliper assemblies are exposed and must be kept free of mud, dirt, and debris as often as possible. Failure to comply can cause the equipment (brake) to fail or degrade, which may result in serious injury or death to personnel and/or damage to equipment.

CAUTION

Do not use water pressure exceeding 30 psi (207 kPa) or caustic cleaning solutions on seals, air intake, exhaust outlet, radiator, condenser, battery box, or other components of vehicle that could be easily damaged by high-pressure water stream. Failure to comply may result in damage to equipment.

Do not use high-pressure water stream to wash components inside battery box. Hand wash batteries and other components. Failure to comply may result in damage to equipment.

Do not use ammonia or any cleaning product that contains ammonia to clean transparent armor. Ammonia breaks down the bond between the inner and outer layers of transparent armor. Do not use aerosol window cleaners. The aerosol propellant may cause transparent armor separation. Failure to comply may result in damage to equipment.

Do not spray water into tailpipe. Failure to comply may result in damage to equipment.

1. Remove all loose equipment from vehicle exterior.
2. Close all exterior storage doors.
3. Remove large amounts mud, debris, dirt, leaves, etc. from vehicle exterior.
4. Clean vehicle exterior of mud, debris, dirt, leaves, etc. using a water hose, clean rag, and soap and water solution.
5. Clean vehicle powertrain components of mud, debris, dirt, leaves, etc. using a water hose, clean rag, and soap and water solution.

END OF TASK

FOLLOW-ON MAINTENANCE

Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

ENGINE OIL SERVICE

INITIAL SETUP:

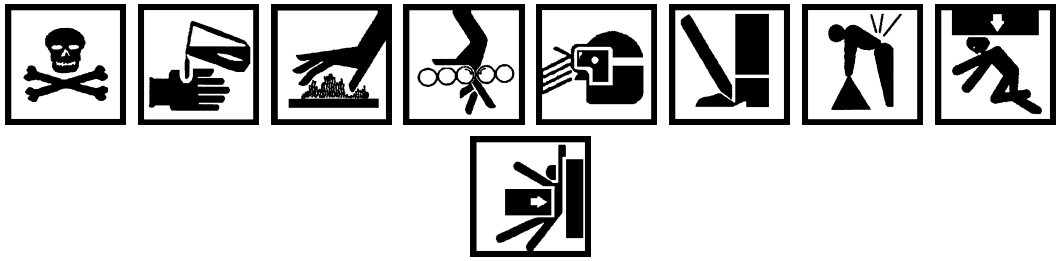
Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)
Lubricating oil, SAE 15W-40, 0 to 120°F (-18 to 49°C) (WP 0110, Item 16)
Lubricating oil, engine, SAE 10W, -10ºF to +120ºF (-23ºC to +49ºC) (WP 0110, Item 18)
Rag, wiping (WP 0110, Item 25)

References
WP 0106

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)
Engine hood opened (WP 0033)

ENGINE OIL SERVICE

WARNING



Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with Standard Operating Procedures (SOP). Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.

Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.

CAUTION

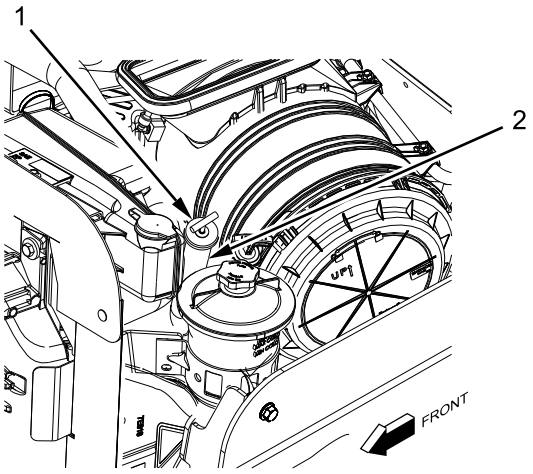
Different grades of engine oil are available for different weather conditions. Normal weather conditions require oil rated from 0 to 120°F (-18 to 49°C). Extremely cold weather conditions require oil rated from -50 to 90°F (-45 to 32°C). Ensure to use the proper grade of engine oil for weather conditions. Failure to comply may result in damage to equipment.

Do not over fill engine oil. If engine oil is overfilled, notify Field Level Maintenance. Failure to comply may result in damage to equipment.

Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Parking vehicle on an incline may affect oil level measurements. Failure to comply may result in damage to equipment.

NOTE

For proper grade of engine oil for weather conditions, refer to WP 0106, Lubrication Instructions.



213062

Figure 1. Engine Oil Dipstick Handle and Fill Tube.

1. Turn yellow engine oil dipstick handle (Figure 1, Item 1) counter-clockwise.
2. Remove engine oil dipstick (Figure 2, Item 1) from fill tube (Figure 1, Item 2).

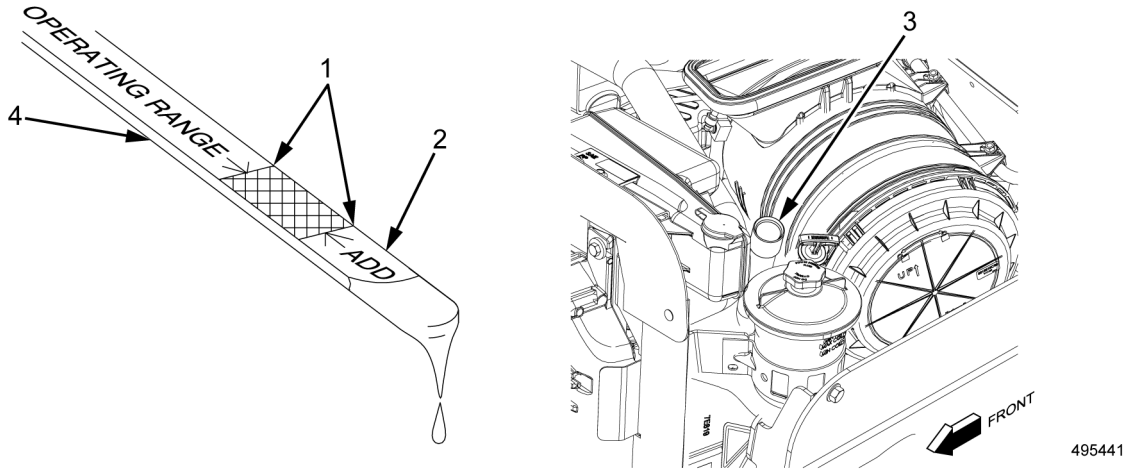


Figure 2. Fill Tube and Engine Oil Dipstick.

3. Wipe engine oil dipstick (Figure 2, Item 4) with clean rag.
4. Insert engine oil dipstick (Figure 2, Item 4) into fill tube (Figure 2, Item 3) until fully seated.
5. Remove engine oil dipstick (Figure 2, Item 4) from fill tube (Figure 2, Item 3). Oil level should be within OPERATING RANGE hash marks (Figure 2, Item 1) above ADD (Figure 2, Item 2) on engine oil dipstick.
6. If oil level is not in OPERATING RANGE hash marks (Figure 2, Item 1) on engine oil dipstick (Figure 2, Item 4), add engine oil to fill tube (Figure 2, Item 3). Refer to WP 0106, Lubrication Instructions.
7. Perform steps 3 through 6 until oil level is within OPERATING RANGE hash marks (Figure 2, Item 1) on engine oil dipstick (Figure 2, Item 4).

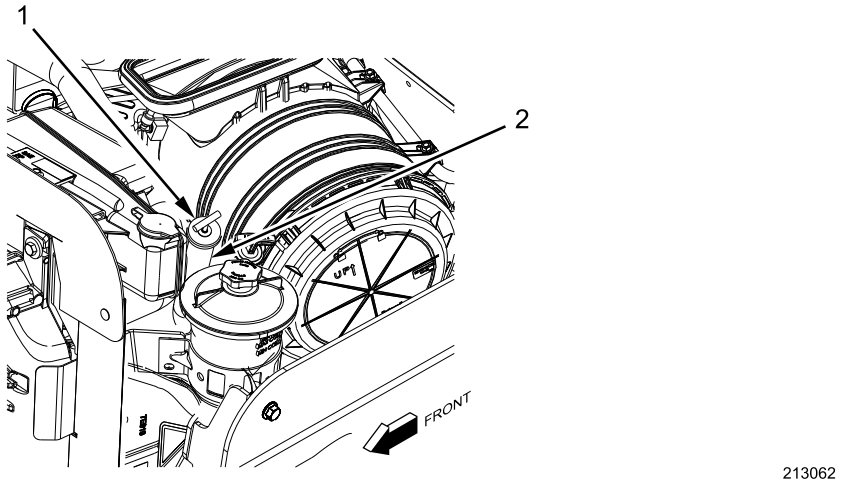


Figure 3. Engine Oil Dipstick.

NOTE

Dipstick rubber seal should fit completely in fill tube, and engine oil dipstick should NOT move freely.

8. Install engine oil dipstick (Figure 2, Item 1) into fill tube (Figure 3, Item 2).
9. Turn yellow engine oil dipstick handle (Figure 3, Item 1) clockwise until snug.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close engine hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

AIR CLEANER ASSEMBLY SERVICE

INITIAL SETUP:

Tools and Special Tools
Extension, socket wrench (WP 0108, Item 18)
Handle, socket wrench (WP 0108, Item 27)
Inflator-gage, pneumatic tire (WP 0108, Item 30)
Screwdriver, flat tip (WP 0108, Item 48)
Socket, socket wrench (WP 0108, Item 54)

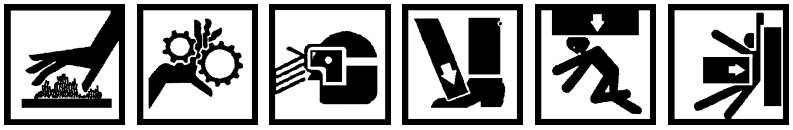
Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

References
WP 0011
WP 0013
WP 0097

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)
Engine hood opened (WP 0033)

REMOVAL

WARNING



Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.

Keep hands and clothing clear of moving parts in the engine compartment. Rotating parts can cause severe injury to personnel. Ensure that all guards are in place and do not wear loose clothing when conducting maintenance. Always check to ensure that the area is clear of personnel and obstructions before starting the engine. Failure to comply may result in injury or death to personnel.

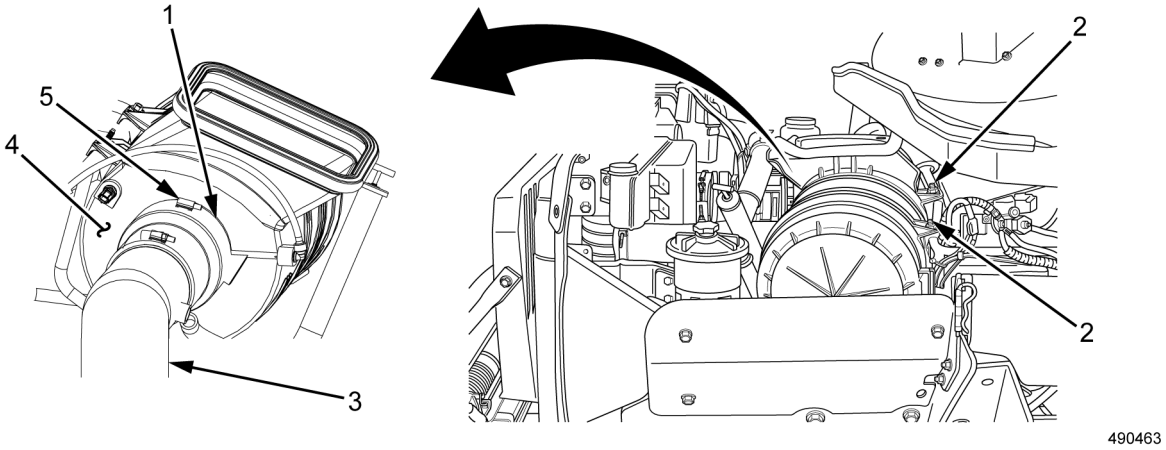


Figure 1. Air Cleaner Assembly.

1. Using screwdriver, loosen hose clamp (Figure 1, Item 5) from air cleaner assembly (Figure 1, Item 4), air cleaner pipe (Figure 1, Item 3), and air cleaner hose (Figure 1, Item 1).
2. Using socket wrench handle, extension, and socket, remove two nuts (Figure 1, Item 2) from air cleaner assembly (Figure 1, Item 4).

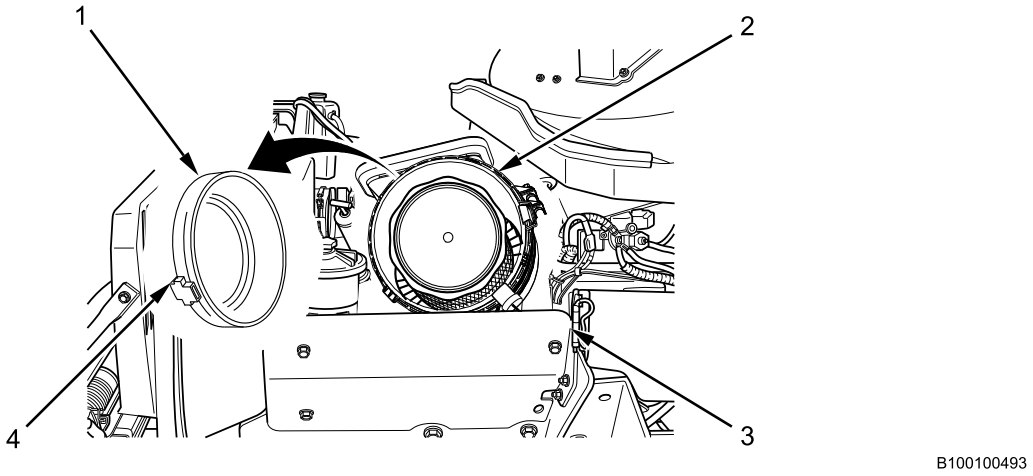


Figure 2. Air Cleaner Assembly Side View.

3. Lift air cleaner assembly (Figure 2, Item 2) clear of armor (Figure 2, Item 3).

CAUTION

Avoid bumping filters in housing, to prevent dirt and debris from entering clean side piping of turbocharger. Dirt or debris may cause damage to engine if allowed to enter turbocharger. Failure to comply may result in damage to equipment.

4. Lift latch (Figure 2, Item 4) and rotate air cleaner cover (Figure 2, Item 1) counterclockwise to remove air cleaner cover from air cleaner assembly (Figure 2, Item 2).

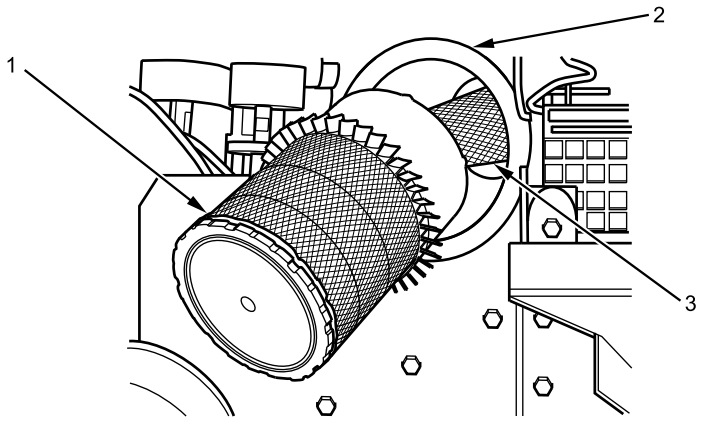


Figure 3. Air Cleaner Assembly Side View.

5. Remove air filter element (Figure 3, Item 1) and internal air filter element (Figure 3, Item 3) from air cleaner assembly (Figure 3, Item 2).

END OF TASK

CLEANING WITH JARRING METHOD

CAUTION

Do not reuse damaged air filter elements. Failure to comply may result in damage to equipment.

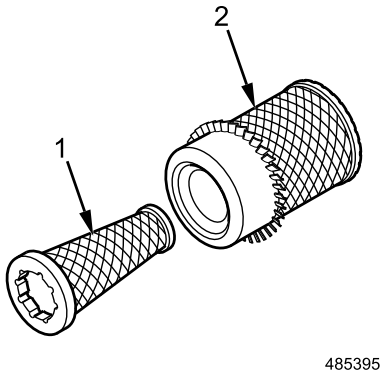


Figure 4. Air Filter Element.

1. Tap sides of internal air filter element (Figure 4, Item 1) and air filter element (Figure 4, Item 2) gently against flat surface.
2. Rotate internal air filter element (Figure 4, Item 1) and air filter element (Figure 4, Item 2) 1/4 turn on side.
3. Repeat steps 1 and 2 until internal air filter element (Figure 4, Item 1) and air filter element (Figure 4, Item 2) is free of contaminant.
4. If contaminant remains clogged in internal air filter element (Figure 4, Item 1) and air filter element (Figure 4, Item 2), notify Field Level Maintenance.
5. Inspect internal air filter element (Figure 4, Item 1) and air filter element (Figure 4, Item 2).
6. If internal air filter element (Figure 4, Item 1) or air filter element (Figure 4, Item 2) is damaged, notify Field Level Maintenance.

END OF TASK

CLEANING WITH COMPRESSED AIR METHOD

WARNING

Do not use compressed air exceeding 30 psi (207 kPa) for cleaning purposes. Use only with effective personal protective equipment, including safety goggles and gloves. Failure to comply may result in serious injury or death to personnel.

CAUTION

Do not reuse damaged air filter elements. Failure to comply may result in damage to equipment.

NOTE

Compressed air should be used when major contaminant is dust.

Air filter element and internal air filter element are cleaned the same way; air filter element shown.

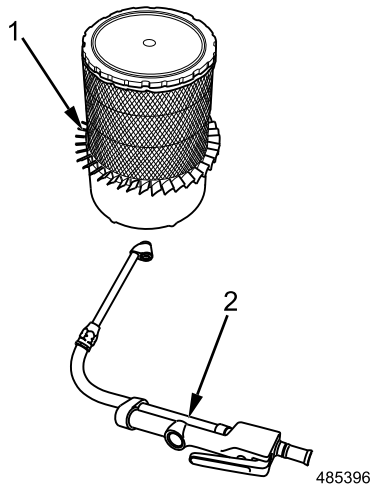


Figure 5. Tire Gage Inflator and Air Filter Element.

1. Connect tire gage inflator (Figure 5, Item 2) to vehicle. Refer to WP 0097, Tire Inflation Procedure.
2. Direct alternating bursts of air against inside of air filter element (Figure 5, Item 1) at least 1 in. (2.5 cm) away from element with the tire gage inflator (Figure 5, Item 2).
3. Move air jet up and down pleats of air filter element (Figure 5, Item 1), slowing rotating air filter element until free of contaminant.
4. If contaminant remains clogged in air filter element (Figure 5, Item 1), notify Field Level Maintenance.
5. Inspect air filter element (Figure 5, Item 1).
6. If air filter element (Figure 5, Item 1) is damaged, notify Field Level Maintenance.
7. When done, disconnect tire gage inflator (Figure 5, Item 2) to vehicle. Refer to WP 0097, Tire Inflation Procedure.

END OF TASK

INSTALLATION

NOTE

Air filters must be replaced if gaskets are damaged or non-resilient, or air filter bodies have dents, excessive pleat bunching, or covered in debris.

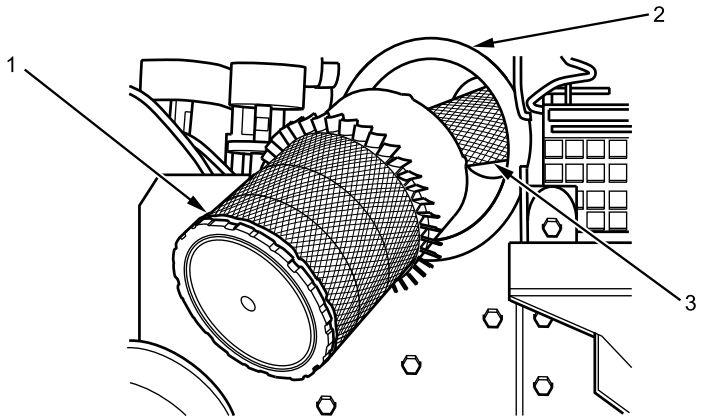


Figure 6. Air Filter Elements.

1. Install internal air filter element (Figure 6, Item 3) and air filter element (Figure 6, Item 1) into air cleaner assembly (Figure 6, Item 2).

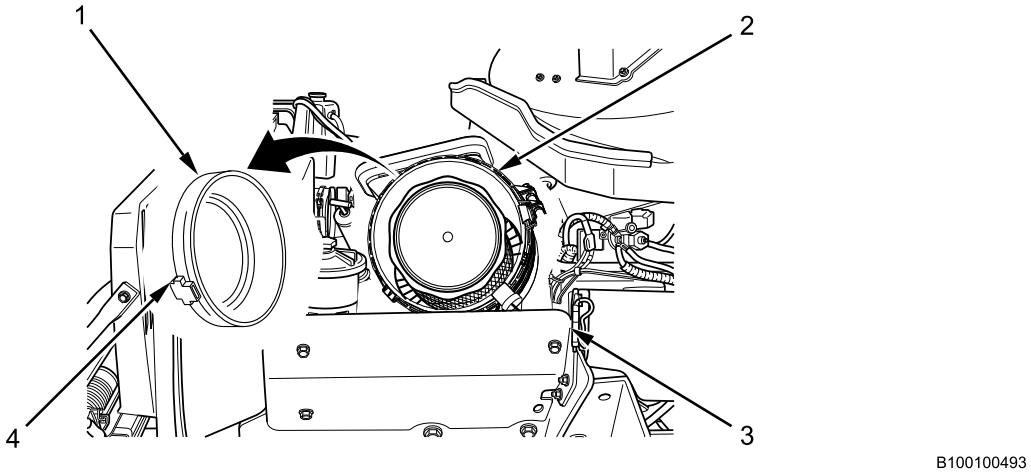


Figure 7. Air Cleaner Assembly Side View.

2. Install air cleaner cover (Figure 7, Item 1) on air cleaner assembly (Figure 7, Item 2) and rotate clockwise to close latch (Figure 7, Item 4).
3. Position air cleaner assembly (Figure 7, Item 2) behind armor (Figure 7, Item 3).

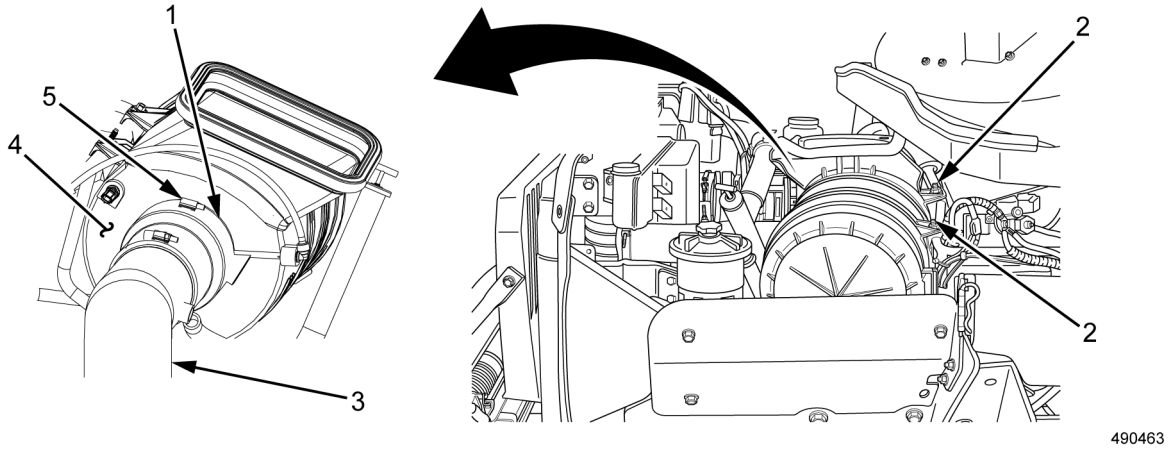


Figure 8. Air Cleaner Assembly.

4. Using socket wrench handle, extension, and socket, install two nuts (Figure 8, Item 2) on air cleaner assembly (Figure 8, Item 4) and tighten securely.
5. Connect air cleaner hose (Figure 8, Item 1) between air cleaner assembly (Figure 8, Item 4) and air cleaner pipe (Figure 8, Item 3).
6. Using screwdriver, tighten hose clamp (Figure 8, Item 5) on air cleaner assembly (Figure 8, Item 4), air cleaner pipe (Figure 8, Item 3), and air cleaner hose (Figure 8, Item 1)

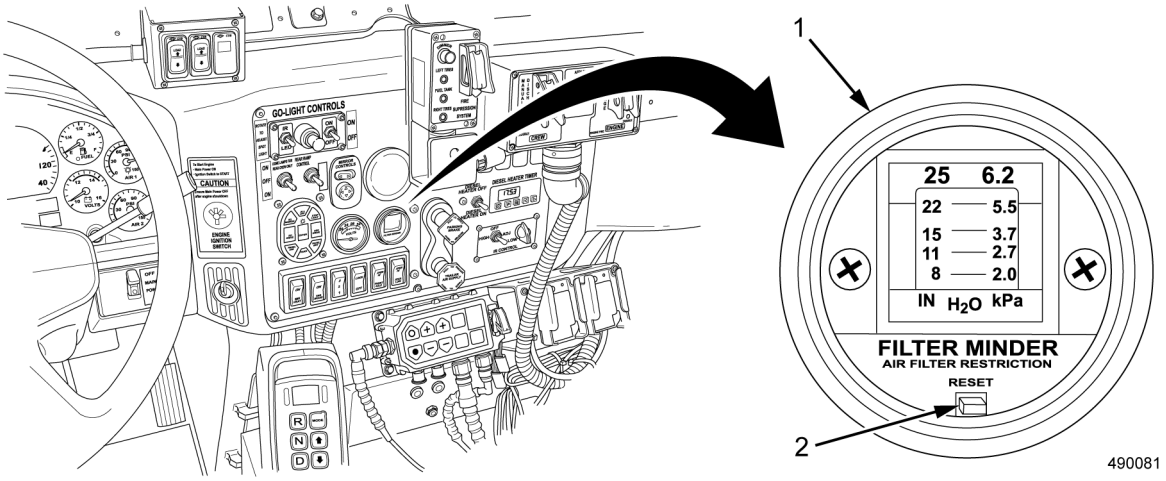


Figure 9. AIR FILTER RESTRICTION Gauge.

7. Press RESET button (Figure 9, Item 2) on AIR FILTER RESTRICTION gauge (Figure 9, Item 1). YELLOW indicator will drop to bottom of window on AIR FILTER RESTRICTION gauge.
8. Start engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
9. Verify AIR FILTER RESTRICTION gauge (Figure 9, Item 1) YELLOW indicator remains at bottom of window. If YELLOW indicator remains at top of AIR FILTER RESTRICTION gauge (Figure 9, Item 1), Notify Field Level Maintenance.
10. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close engine hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

FUEL/WATER SEPARATOR DRAINING

INITIAL SETUP:

Materials/Parts
Goggles, industrial (WP 0110, Item 13)
Rag, wiping (WP 0110, Item 25)

Personnel Required
Crewmember - (2)

References
WP 0004
WP 0011

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine started (WP 0013)
Wheels chocked (WP 0013)
Engine hood opened (WP 0033)

FUEL/WATER SEPARATOR DRAINING

WARNING

Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with Standard Operating Procedures (SOP). Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.

Fuel is flammable and can explode. Keep all open flames, flammable materials, ignition sources, and sparks away from diesel fuel and keep fire extinguisher nearby. Do not smoke when working with fuel. Do not work on fuel system when engine is hot. Fuel can be ignited by hot engine. Failure to comply may result in serious injury or death to personnel.

When draining fuel from fuel/water separator, wear safety goggles. Failure to comply may result in serious injury to personnel.

Fluids pose a slip hazard if spilled. Ensure spills are cleaned up immediately and dispose of material in accordance with SOP. Failure to comply may result in serious injury or death to personnel.

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use a drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir / tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with SOP. Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and / or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Do not fill fuel tank with engine running. Do not overfill fuel tank. Clean fuel spills immediately according to SOP. Ensure fuel nozzle is grounded to filler neck to prevent sparks. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

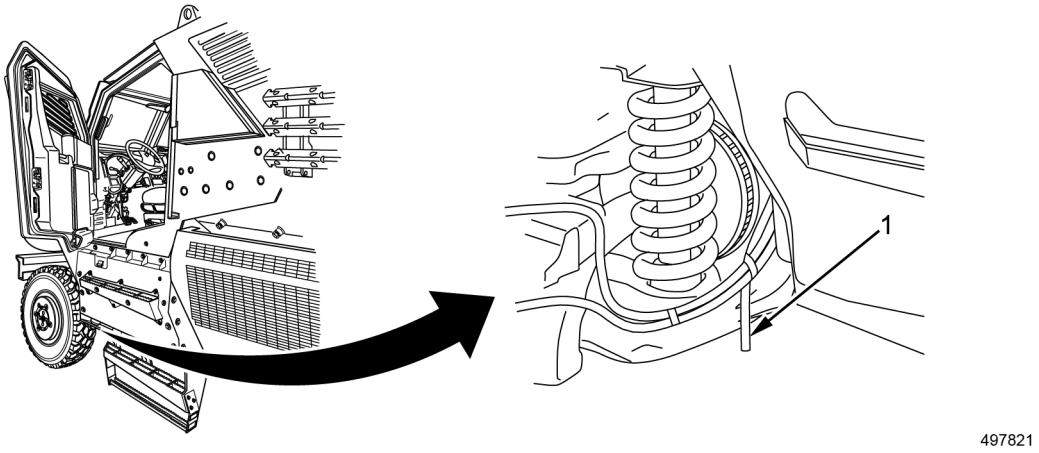


Figure 1. Fuel/Water Separator Drain Hose.

1. Start vehicle engine. Refer to WP 0011, Operation Under Usual Condition - Engine Start Procedure - Above 32°F (0°C). Allow vehicle to run until engine has reached normal operating temperatures 190 - 205°F (88 - 96°C). Refer to WP 0004, Description and Use of Operator Controls and Indicators.
2. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
3. Place a suitable container under fuel/water separator drain hose (Figure 1, Item 1).

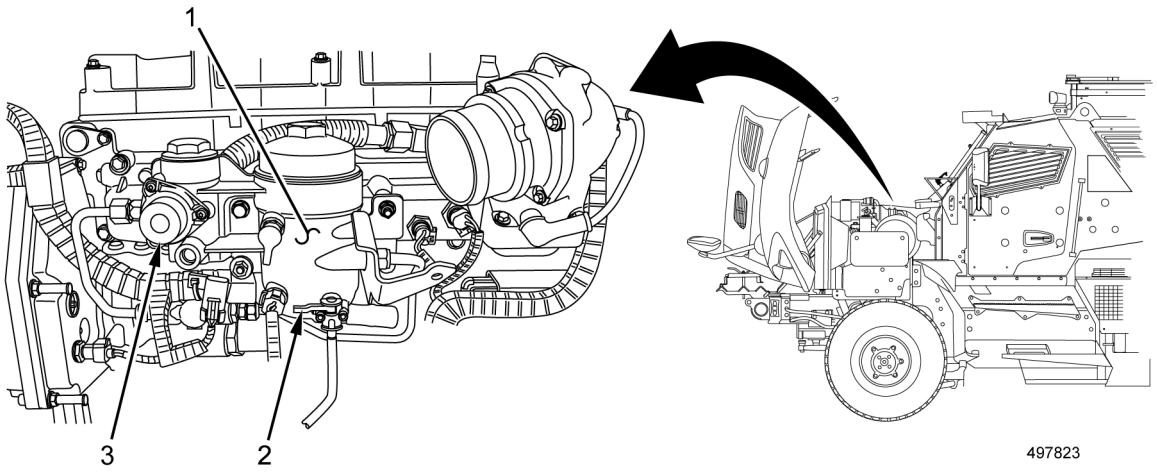


Figure 2. Fuel/Water Separator.

NOTE

Air cleaner assembly removed from figure for clarity.

Climate has an impact on the amount of condensation that may build in the system, which means fluid does not always come out during this operation. If fluid is present, the average amount should vary between a single tablespoon and 1/4 cup.

4. Turn fuel/water separator drain valve (Figure 2, Item 2) to the right to open.
5. If fluid drains slowly from fuel/water separator drain valve (Figure 2, Item 2), press and release priming pump (Figure 2, Item 3) until fluid flows freely.
6. Allow water and contaminated fuel to drain from fuel/water separator (Figure 2, Item 1) until assistant observes clean fuel flowing out.
7. Turn fuel/water separator drain valve (Figure 2, Item 2) to the left to close.
8. Remove suitable container and dispose of fluid in accordance with SOP.

END OF TASK

FOLLOW-ON MAINTENANCE

Close engine hood (WP 0033).

END OF WORK PACKAGE

CREW MAINTENANCE

COOLANT SERVICE

INITIAL SETUP:

Materials/Parts
Antifreeze, ethylene glycol, type 1B (WP 0110, Item 1), or
Antifreeze, ethylene glycol, type 1C (WP 0110, Item 2)
Gloves, leather (WP 0110, Item 10)
Gloves, nitrile, large (WP 0110, Item 11)
Goggles, industrial (WP 0110, Item 13)
Rag, wiping (WP 0110, Item 25)

References
WP 0106

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)
Engine hood opened (WP 0033)

SERVICE

WARNING

Cooling system components become pressurized and extremely hot during normal operation. To prevent serious injury from hot coolant or scalding steam that escapes when removing radiator cap, radiator overflow cap, or deaeration tank pressure cap; ensure to allow engine to cool for 15 minutes, wrap a thick cloth around cap to be removed, loosen cap slowly one-quarter to one-half turn counterclockwise, and pause to allow pressure to release, and then continue to turn cap counterclockwise to remove. Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with Standard Operating Procedures (SOP). Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.

Fluids pose a slip hazard if spilled. Ensure spills are cleaned up immediately and dispose of material in accordance with SOP. Failure to comply may result in serious injury or death to personnel.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Ethylene glycol reacts with strong acids and oxidants and is combustible. Extinguish fires with alcohol foam, dry chemical, or carbon dioxide. Use goggles, gloves, and boots when handling. Keep run-off coolant water out of sewers and water sources. Failure to comply may result in environmental damage, injury to personnel, and/or damage to equipment

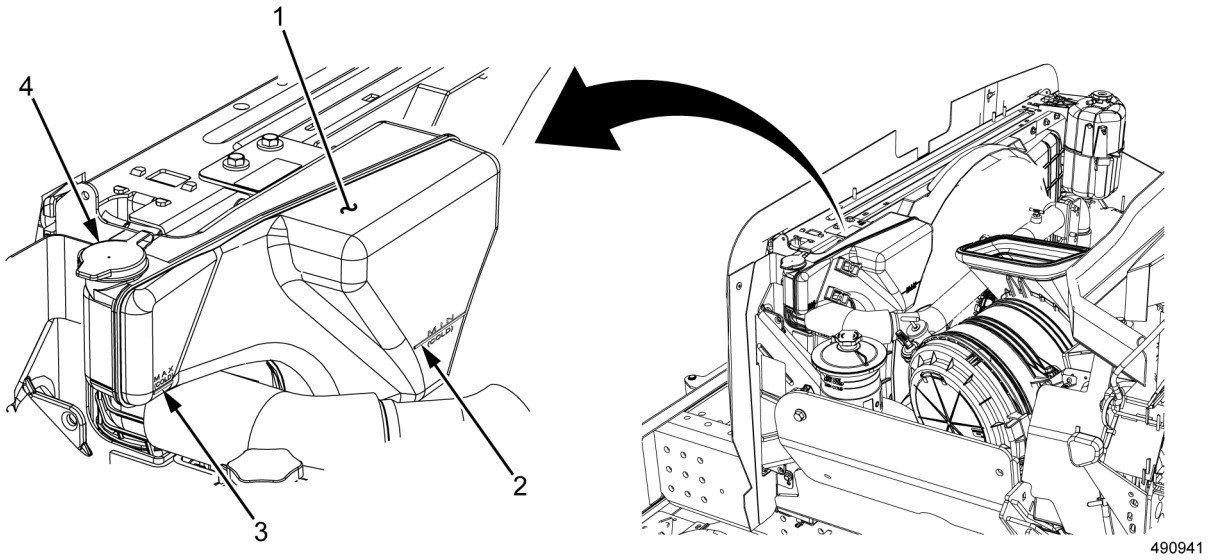


Figure 1. Radiator Overflow Tank.

NOTE

Engine should be cold when performing steps 1 through 4.

1. Verify coolant level is below Minimun (MIN) (COLD) mark (Figure 1, Item 2) on radiator overflow tank (Figure 1, Item 1).
2. Remove radiator overflow tank cap (Figure 1, Item 4) from radiator overflow tank (Figure 1, Item 1) by pulling up.

CAUTION

Radiator overflow tank is initially filled with orange (extended life) coolant from the factory. If this is first time coolant is being added and orange coolant is in radiator overflow tank, notify Field Level Maintenance. Do not mix orange coolant with any other color coolant. Failure to comply may result in damage to equipment.

NOTE

Type 1B antifreeze and Type 1C antifreeze can be mixed. For correct temperature range antifreeze use, refer to WP 0106, Lubrication Instructions.

3. Fill radiator overflow tank (Figure 1, Item 1) with coolant until level is between MIN (COLD) mark (Figure 1, Item 2) and Maximum (MAX) (COLD) mark (Figure 1, Item 3) on radiator overflow tank.
4. Install radiator overflow tank cap (Figure 1, Item 4) on radiator overflow tank (Figure 1, Item 1) by pushing down until radiator overflow tank cap clicks in place.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close engine hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

DEAERATION TANK PRESSURE CAP REMOVAL AND INSTALLATION

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)
Rag, wiping (WP 0110, Item 25)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)
Engine hood opened (WP 0033)

DEAERATION TANK PRESSURE CAP REMOVAL

WARNING

Cooling system components become pressurized and extremely hot during normal operation. To prevent serious injury from hot coolant or scalding steam that escapes when removing radiator cap, radiator overflow cap, or deaeration tank pressure cap; ensure to allow engine to cool for 15 minutes, wrap a thick cloth around cap to be removed, loosen cap slowly one-quarter to one-half turn counterclockwise, and pause to allow pressure to release, and then continue to turn cap counterclockwise to remove. Ensure all personnel stay clear of radiator while engine is running. Air in radiator will be released, which may cause hot coolant to spray out. Wear safety goggles and work gloves while servicing cooling system. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with Standard Operating Procedures (SOP). Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.

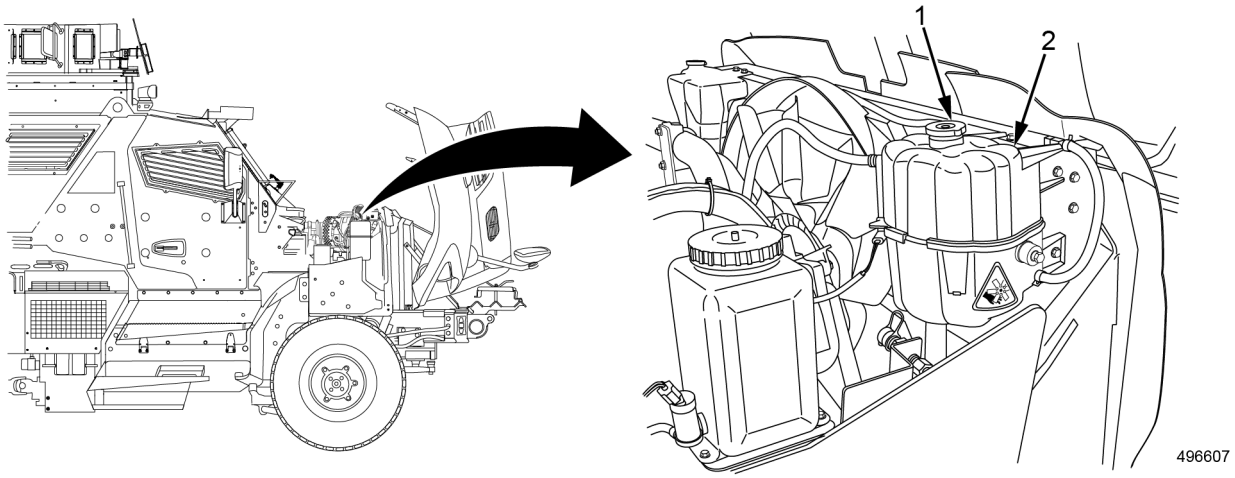


Figure 1. Deaeration Tank Pressure Cap.

1. If engine is warm, allow engine to cool for 15 minutes.
2. Wrap a thick cloth around deaeration tank pressure cap (Figure 1, Item 1).
3. Loosen deaeration tank pressure cap (Figure 1, Item 1) slowly one-quarter to one-half turn counterclockwise, and pause to allow pressure to release.
4. Once pressure is released, push cap down and continue to turn deaeration tank pressure cap (Figure 1, Item 1) counterclockwise to remove from tank (Figure 1, Item 2).

END OF TASK

DEAERATION TANK PRESSURE CAP INSTALLATION

1. Install deaeration tank pressure cap (Figure 1, Item 1) on tank (Figure 1, Item 2).
2. Push down and turn deaeration tank pressure cap (Figure 1, Item 1) clockwise until secure.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

CIRCUIT BREAKER RESET

INITIAL SETUP:

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)

BREAKER PANEL CIRCUIT BREAKER RESET

NOTE

If circuit breaker trips a second time, notify Field Level Maintenance.

A portion of the Automatic Fire Extinguishing System (AFES) and Fire Suppression System (FSS) control panels mounting bracket removed from figure for clarity.

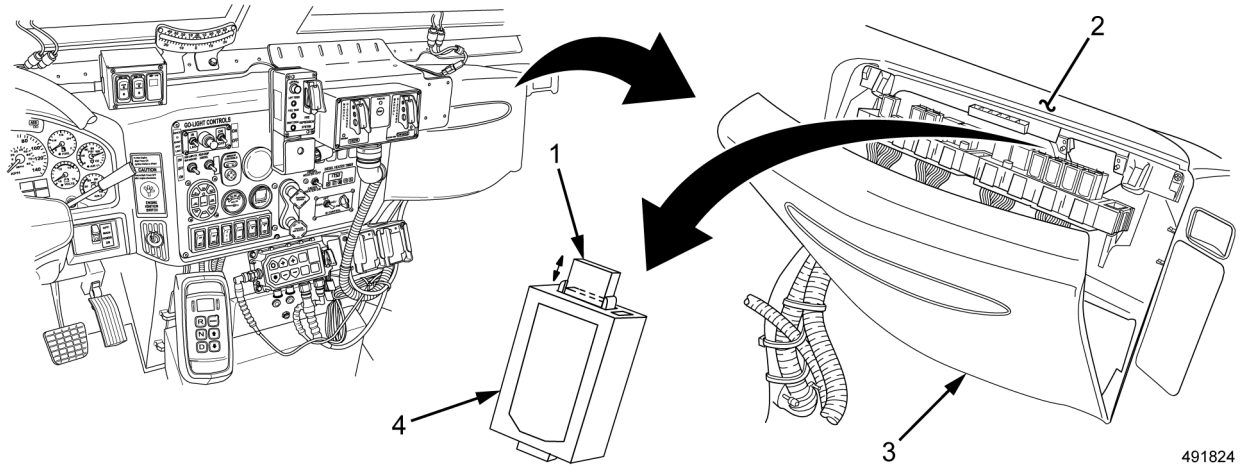


Figure 1. Circuit Breaker Reset.

1. Pull open and remove circuit breaker panel cover (Figure 1, Item 3) from circuit breaker panel (Figure 1, Item 2).
2. Press button (Figure 1, Item 1) down on tripped circuit breaker (Figure 1, Item 4). Circuit breaker should reset.

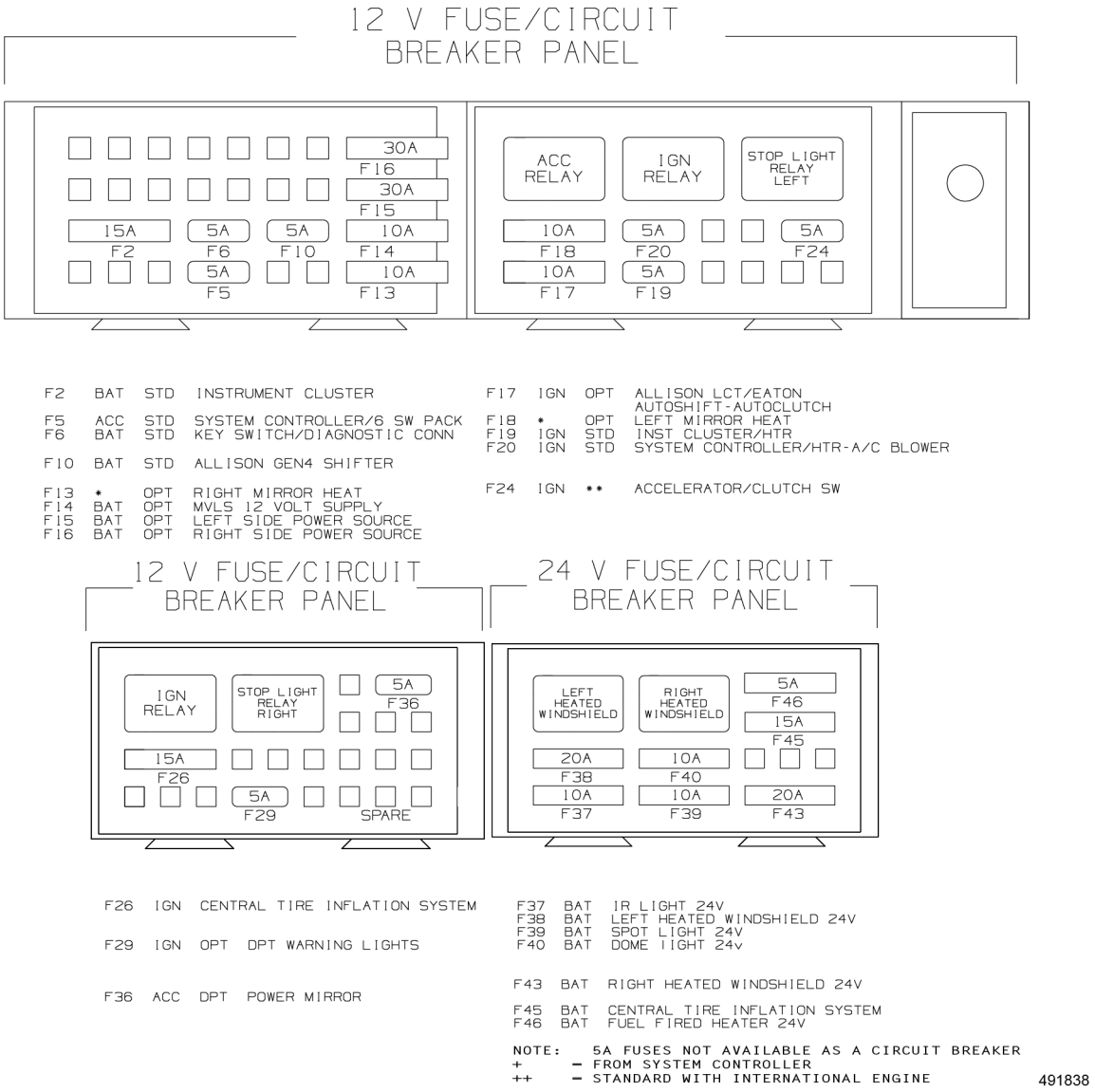


Figure 2. Circuit Breaker Panel Legend.

NOTE

Only circuit breakers have the capability to be reset. Relays and fuses do not have a reset capability.

3. Refer to Figure 2 to identify fuses and circuit breakers from the circuit breaker panel.

END OF TASK

24V POWER DISTRIBUTION MODULE CIRCUIT BREAKER RESET

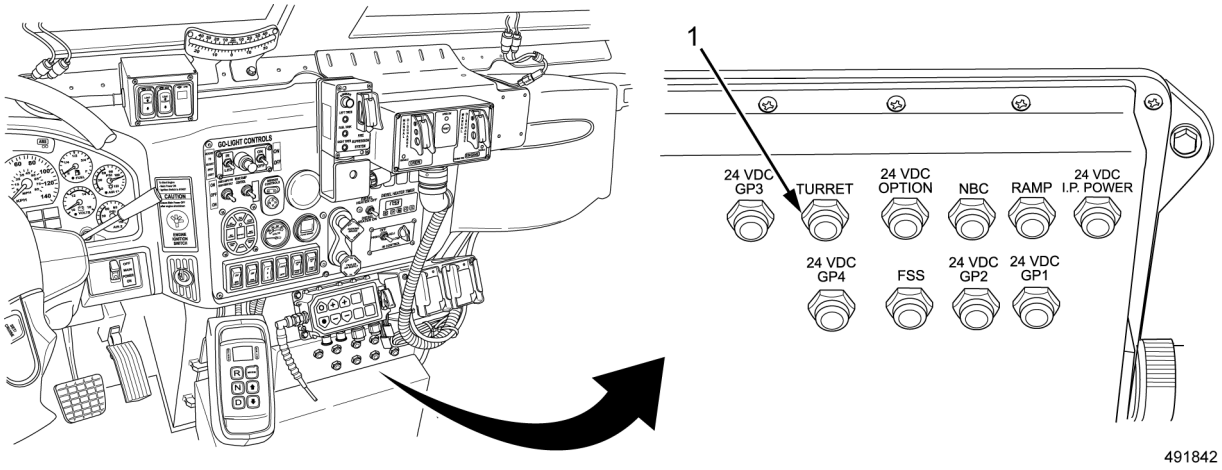
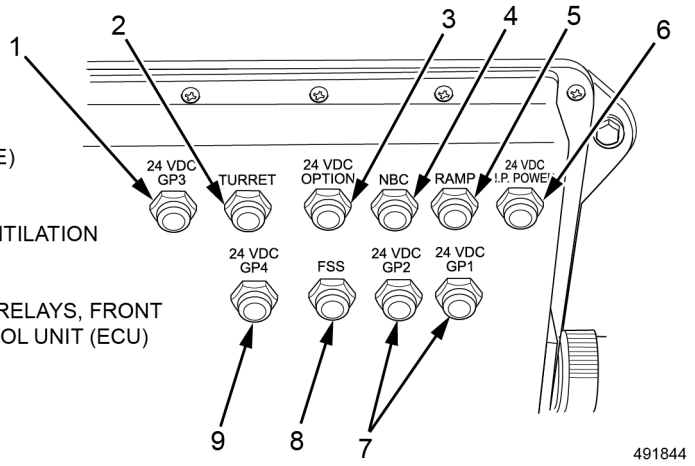


Figure 3. 24V Power Distribution Module Breaker Reset.

NOTE

Turret circuit breaker shown, others similar.

1. Press tripped circuit breaker (Figure 3, Item 1). Circuit breaker should reset.



Legend
1. GOVERNMENT FURNISHED EQUIPMENT (GFE)
2. IMPROVED TURRET DRIVE SYSTEM
3. GFE
4. LIFE SUPPORT SYSTEM (LSS), HEATING, VENTILATION AND COOLING (HVAC) SYSTEM
5. REAR DOOR RAMP
6. DOMELIGHT SWITCH, HEATED WINDSHIELD RELAYS, FRONT SPOTLIGHT, INFARED LIGHT, ENGINE CONTROL UNIT (ECU)
7. GFE
8. NOT USED
9. GFE

Figure 4. Power Distribution Module Legend.

2. Refer to Figure 4 to determine which electrical functions are controlled by circuit breakers on the power distribution module.

END OF TASK

FOLLOW-ON MAINTENANCE

Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

TRANSMISSION FLUID SERVICE

INITIAL SETUP:

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)
Lubricating oil, engine crankcase, SAE 0W-30, -50ºF to +90ºF (all temperatures) (WP 0110, Item 17)
Lubricating oil, engine, SAE 10W, -10ºF to +120ºF (-23ºC to +49ºC) (WP 0110, Item 18)
Rag, wiping (WP 0110, Item 25)

References
WP 0106

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine started (WP 0011)
Wheels chocked (WP 0013)
Engine hood opened (WP 0033)

WARNING

Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with Standard Operating Procedures (SOP). Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.

Keep hands and clothing clear of moving parts in the engine compartment. Rotating parts can cause severe injury to personnel. Ensure that all guards are in place and do not wear loose clothing or jewelry when conducting maintenance. Always check to ensure that the area is clear of personnel and obstructions before starting the engine. Failure to comply may result in injury or death to personnel.

Fluids pose a slip hazard if spilled. Ensure spills are cleaned up immediately and dispose of material in accordance with SOP. Failure to comply may result in serious injury or death to personnel.

Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.

Use care when working with hot transmission and fluid. Wear safety goggles, work gloves, and long sleeves to avoid injury. Avoid contact with hot transmission oil or sump when draining transmission oil. If transmission oil temperature is above 220°F (104°C), allow transmission oil to cool before removing dipstick. Failure to comply may result in serious injury or death to personnel.

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with local site procedures and regulations. Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Different grades of transmission oil are available for different weather conditions. Normal conditions require oil rated from -10 to 120°F (-23 – 49°C). Extremely cold weather conditions require oil rated for all temperatures. Ensure to use the proper grade of transmission oil for weather conditions. Failure to comply may result in damage to equipment.

TRANSMISSION FLUID SERVICE - COLD CHECK PROCEDURE

CAUTION

Do not overfill transmission oil. If transmission is overfilled, notify Field Level Maintenance. Failure to comply may result in damage to equipment.

Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment.

NOTE

Perform cold check procedure when TRANS temperature gauge reaches 60 to 120°F (15 to 49°C).

For proper grade of transmission oil for weather conditions, refer to WP 0106, Lubrication Instructions.

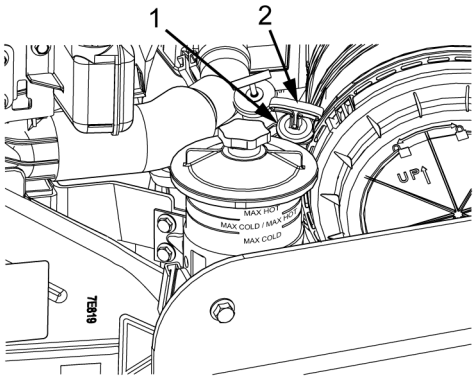


Figure 1. Transmission Fluid Dipstick.

1. Turn dipstick handle (Figure 1, Item 2) counterclockwise in fill tube (Figure 1, Item 1).

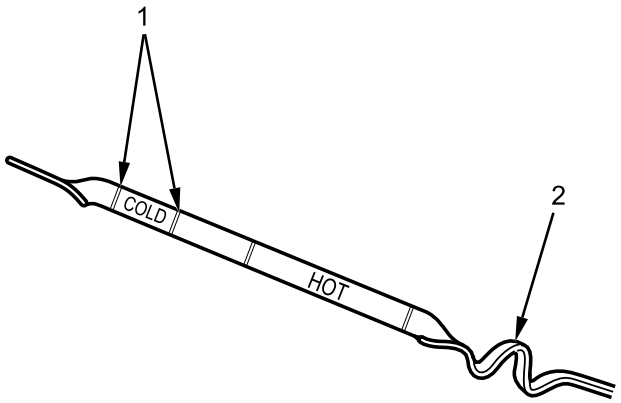


Figure 2. Transmission Fluid Dipstick Cold Range.

2. Pull dipstick (Figure 2, Item 2) out from fill tube (Figure 3, Item 1).
3. Wipe dipstick (Figure 2, Item 2) clean with rag.
4. Insert dipstick (Figure 2, Item 2) into fill tube (Figure 3, Item 1) until fully seated, then remove dipstick. Fluid level should be within COLD bands (Figure 2, Item 1) on dipstick (Figure 2, Item 2).

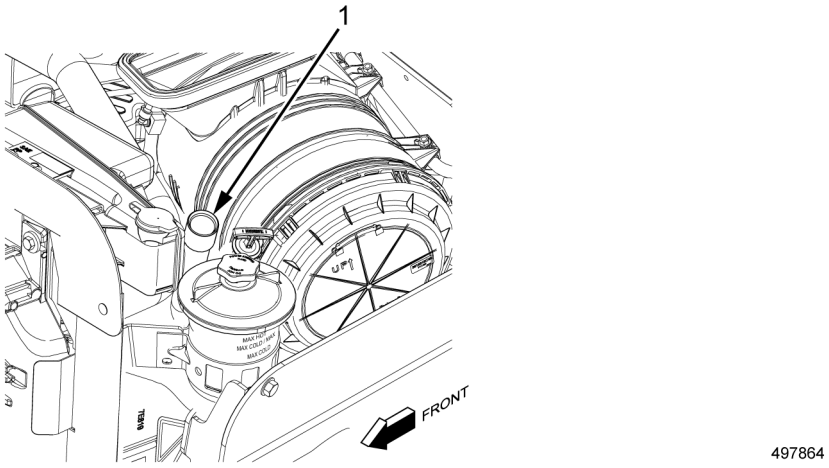


Figure 3. Transmission Fluid Fill Tube.

5. If fluid level is low, add transmission oil to fill tube (Figure 3, Item 1). Refer to WP 0106, Lubrication Instructions.

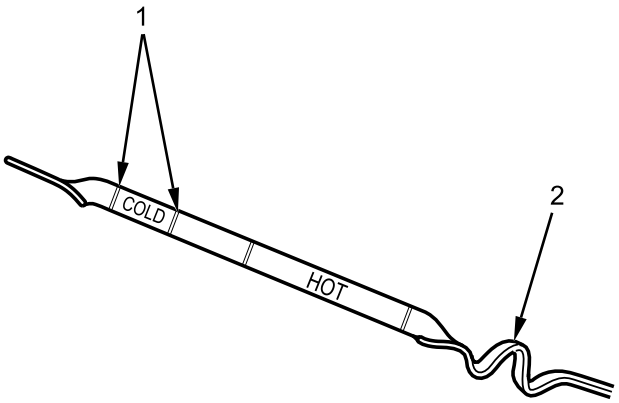


Figure 4. Transmission Fluid Dipstick Cold Bands.

6. Perform steps 3 through 5 until transmission oil level is within COLD bands (Figure 4, Item 1) on dipstick (Figure 4, Item 2).

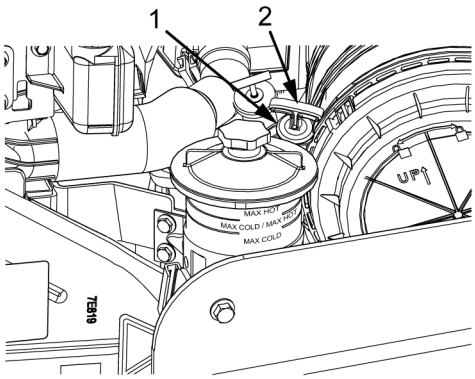


Figure 5. Transmission Fluid Dipstick.

7. Insert dipstick (Figure 4, Item 2) into fill tube (Figure 5, Item 1).
8. Turn dipstick handle (Figure 5, Item 2) until snug.

END OF TASK

TRANSMISSION FLUID SERVICE - HOT CHECK PROCEDURE

CAUTION

Different grades of transmission oil are available for different weather conditions. Normal weather conditions require oil rated from -10 to 120°F (-23 – 49°C). Extremely cold weather conditions require oil rated for all temperatures. Ensure to use the proper grade of transmission oil for weather conditions. Failure to comply may result in damage to equipment.

Do not overfill transmission oil. Failure to comply may result in damage to equipment.

Ensure vehicle is parked on a level surface with wheels chocked and parking brake applied. Failure to comply may result in damage to equipment.

NOTE

Vehicle should be driven for at least 30 minutes for transmission oil to reach normal operation temperature. Perform hot check procedure when TRANS temperature gauge reaches 180 to 220°F (82 - 104°C).

For proper grade of transmission oil for weather conditions, refer to WP 0106, Lubrication Instructions.

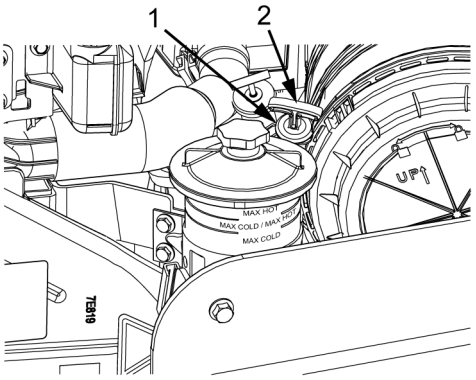


Figure 6. Transmission Fluid Dipstick.

1. Turn dipstick handle (Figure 6, Item 2).
2. Pull dipstick (Figure 7, Item 2) out from fill tube (Figure 6, Item 1).
3. Wipe dipstick (Figure 7, Item 2) clean with rag.

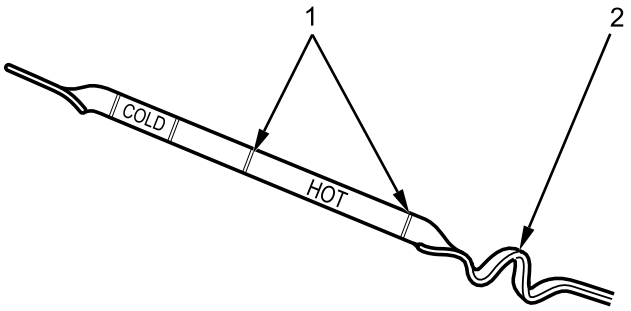


Figure 7. Transmission Fluid Dipstick Hot Range.

4. Insert dipstick (Figure 7, Item 2) into fill tube (Figure 6, Item 2) until fully seated, then remove dipstick. Fluid level should be within HOT bands (Figure 7, Item 1) on dipstick (Figure 7, Item 2).

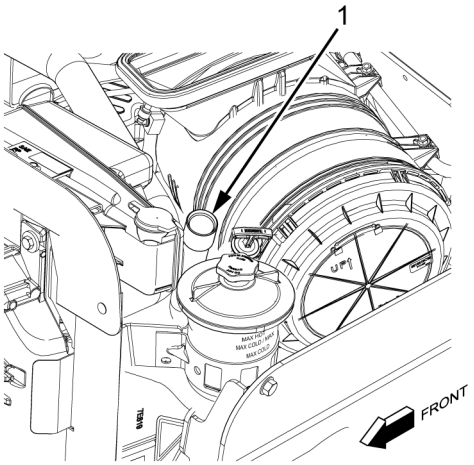
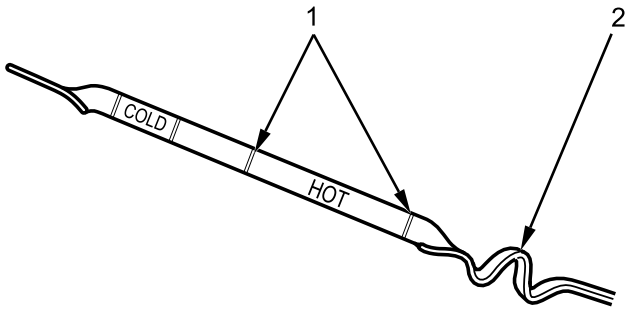


Figure 8. Transmission Fluid Fill Tube.

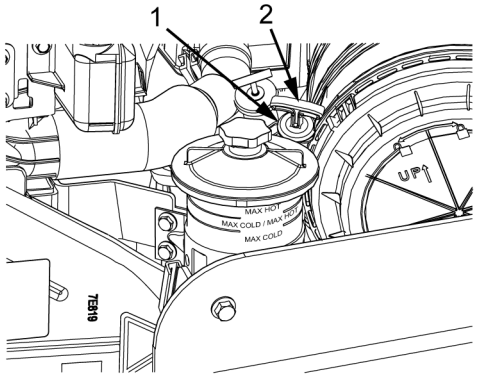
5. If fluid level is low, add transmission oil to fill tube (Figure 8, Item 1). Refer to WP 0106, Lubrication Instructions.



213246

Figure 9. Transmission Fluid Dipstick Hot Bands.

6. Perform steps 3 through 5 until transmission oil level on dipstick is within HOT bands (Figure 9, Item 1) on dipstick (Figure 9, Item 2).



497862

Figure 10. Transmission Fluid Dipstick.

7. Insert dipstick (Figure 9, Item 2) into fill tube (Figure 10, Item 1).
8. Turn dipstick handle (Figure 10, Item 2) until snug.

END OF TASK

Follow-On Maintenance

1. Close engine hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

TIRE INFLATION PROCEDURE

INITIAL SETUP:

Tools and Special Tools
Inflator, gage, pneumatic tire (WP 0108, Item 30)

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

References
WP 0002
WP 0004

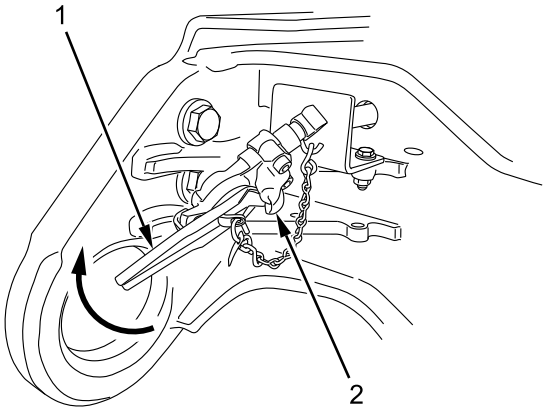
Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Wheels chocked (WP 0013)
Rear door/ramp closed (WP 0018)
Engine running at high idle (1200-1500 rpm) (WP 0048)

CONNECT AIR HOSE

WARNING

Air system is under pressure. Wear safety goggles and gloves. Do not disconnect any air system fitting. Hoses may whip and injure personnel, and air under pressure can penetrate skin. Failure to comply may result in serious injury or death to personnel.

Gladhands are under pressure. Wear protective goggles and do not place face in front of gladhands while draining air reservoirs. Failure to comply may result in serious injury or death to personnel.



B101500428

Figure 1. Rear EMERGENCY Gladhand.

NOTE

This procedure should only be performed as required to complete a mission.

Vehicle gladhands are labeled SERVICE on the commander side and EMERGENCY on the driver side of the vehicle.

1. Rotate dummy coupling (Figure 1, Item 1) of rear EMERGENCY gladhand (Figure 1, Item 2) on vehicle to disconnect.

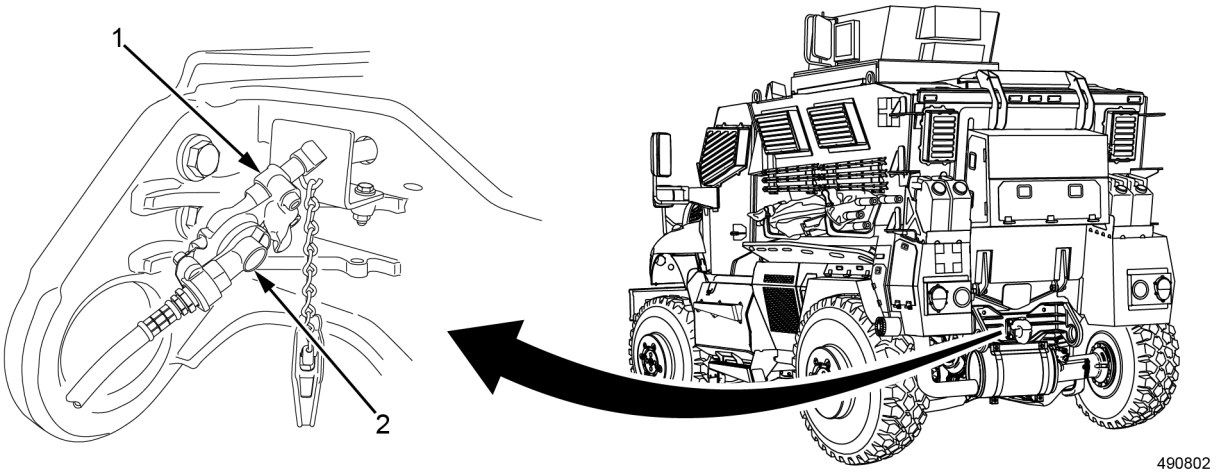


Figure 2. Air Hose Gladhand Connection.

NOTE

Tire gage inflator is part of Basic Issue Items (BII). Tire gage inflator has a gladhand connection, and must be connected to the EMERGENCY rear gladhand so air pressure is available when brake air system is charged.

2. Connect tire gage inflator hose gladhand (Figure 2, Item 2) to EMERGENCY gladhand (Figure 2, Item 1) on vehicle.
3. Allow brake air pressure to build in both tanks to a minimum of 110 psi (758 kPa). Refer to WP 0004, Description And Use Of Operator Controls And Indicators.
4. Push RED TRAILER AIR SUPPLY knob in. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

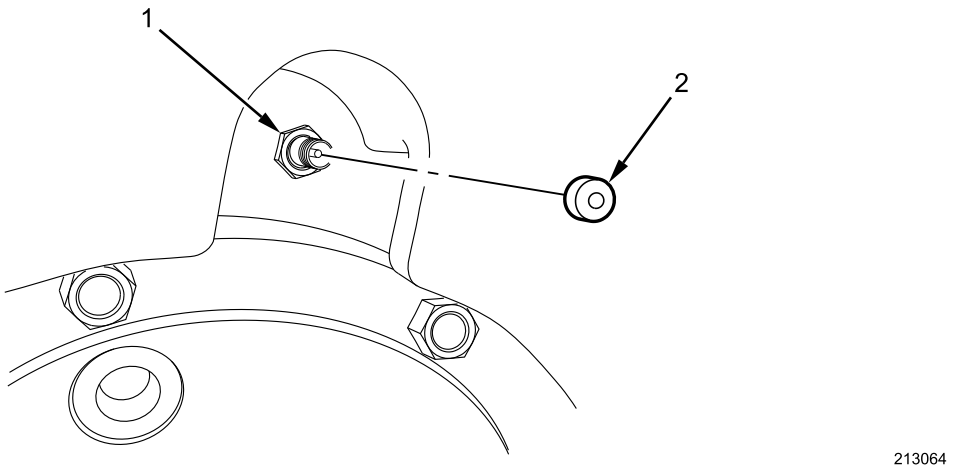


Figure 3. Valve Stem Cap.

NOTE

Rear tire shown; front tire similar.

5. Remove valve stem cap (Figure 3, Item 2) from valve stem (Figure 3, Item 1).
6. Using tire gage inflator, inflate tire to appropriate air pressure level. Refer to WP 0002, Equipment Description And Data.

END OF TASK

DISCONNECT AIR HOSE

1. When done using tire gage inflator, install valve stem cap (Figure 3, Item 2) on valve stem fitting (Figure 3, Item 1).
2. Pull RED TRAILER AIR SUPPLY knob out. Refer to WP 0004, Description and Use of Operator Controls and Indicators.

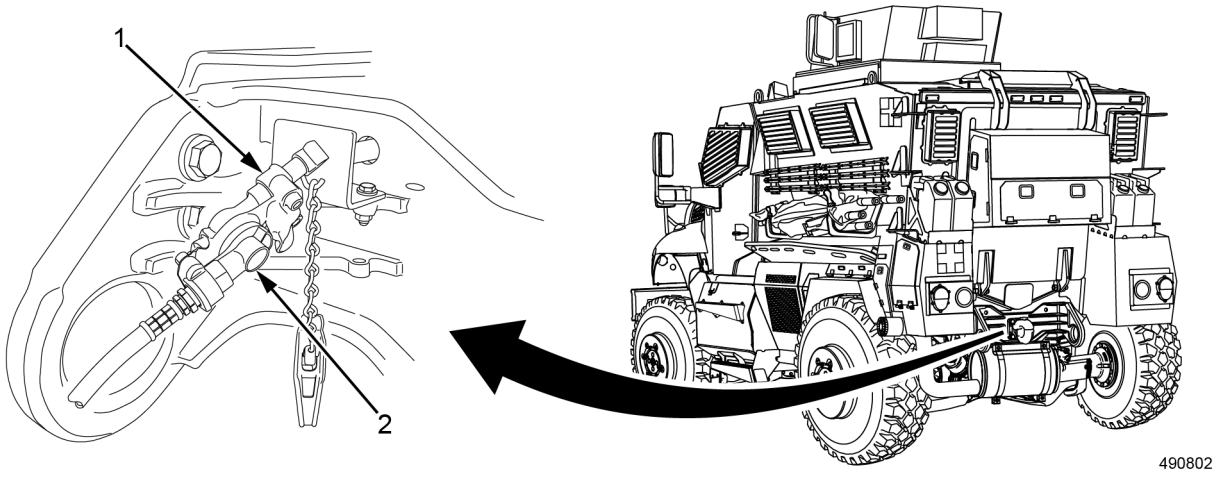


Figure 4. Air Hose Gladhand Disconnect.

3. Disconnect tire inflator hose gladhand (Figure 4, Item 2) from EMERGENCY gladhand (Figure 4, Item 1) on vehicle.

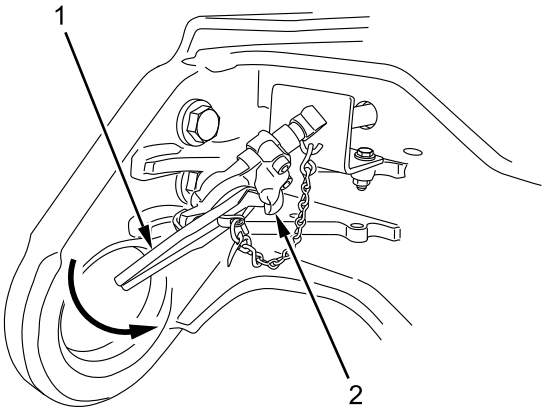


Figure 5. Rear EMERGENCY Gladhand.

4. Connect dummy coupling (Figure 5, Item 1) to rear EMERGENCY gladhand (Figure 5, Item 2) on vehicle.
5. Notify Field Level Maintenance when mission is complete.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Reduce engine speed to idle for 2-3 minutes (WP 0048).
2. Shut down engine (WP 0013).
3. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

EXTERIOR BATTERY BOX ARMOR DOOR OPEN AND CLOSE

INITIAL SETUP:

Tools and Special Tools
Extension, socket wrench (WP 0108, Item 18)
Handle, socket wrench (WP 0108, Item 27)
Socket, socket wrench (WP 0108, Item 57)
Wrench, adjustable (WP 0108, Item 69)

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

Equipment Condition
Engine shutdown (WP 0013)

WARNING

Turn MAIN POWER switch OFF prior to performing maintenance on battery or electrical system. Wear safety goggles and long sleeves when working on or near batteries. Batteries contain corrosive acid and can produce explosive gases. Batteries supply electrical current that can cause burns and electrical shock. Avoid leaning over or onto battery. Do not wear jewelry and do not smoke or have open flame or spark near battery. Do not allow tools to contact battery box or battery terminals. Dispose of or recycle used batteries according to local procedures and waste management battery recycling resources. Failure to comply may result in serious injury or death to personnel and equipment or environmental damage.

Battery acid must not contact eyes, skin, or clothing. If battery acid contacts eyes or skin, flush area with large amounts of water for 15 minutes and seek immediate medical attention. If swallowed, do not induce vomiting. Drink large amounts of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Seek immediate medical attention. Failure to comply may result in serious injury or death to personnel.

Exterior armor doors are heavy. Use caution when opening and closing exterior armor doors. Ensure all body parts and gear are clear before closing and opening exterior armor doors. Failure to comply may result in serious injury or death to personnel.

OPEN

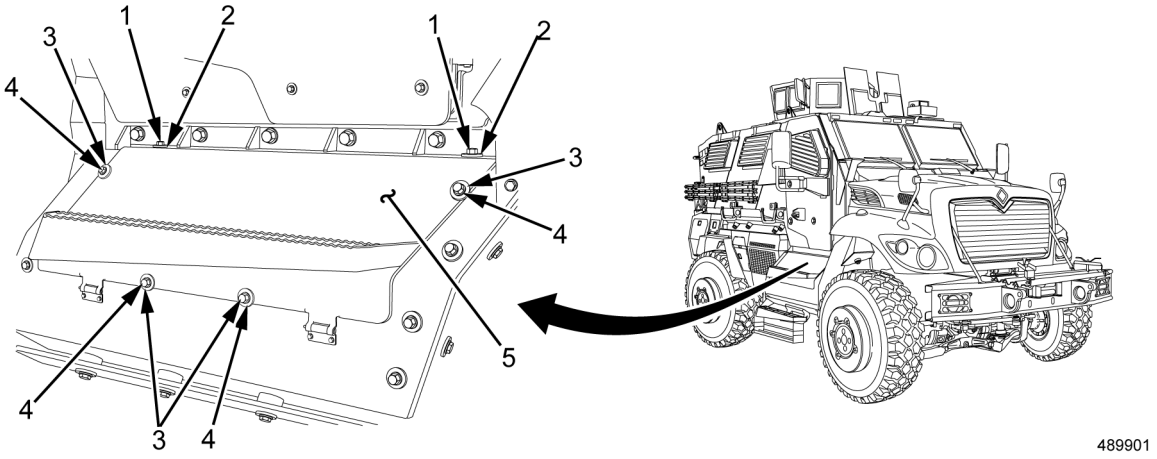


Figure 1. Exterior Battery Box Armor Door.

1. Using adjustable wrench, remove two bolts (Figure 1, Item 1) and washers (Figure 1, Item 2) from exterior battery box armor door (Figure 1, Item 5).
2. Using socket wrench handle, extension, and socket, remove four bolts (Figure 1, Item 4) and washers (Figure 1, Item 3) from exterior battery box armor door (Figure 1, Item 5).
3. Lower exterior battery box armor door (Figure 1, Item 5) down to open.

END OF TASK

CLOSE

1. Raise exterior battery box armor door (Figure 1, Item 5) up to close.
2. Using socket wrench handle, extension, and socket, secure exterior battery box armor door (Figure 1, Item 5) with four washers (Figure 1, Item 3) and bolts (Figure 1, Item 4). Tighten bolts securely.
3. Using adjustable wrench, install two bolts (Figure 1, Item 1) and washers (Figure 1, Item 2) in exterior battery box armor door (Figure 1, Item 5).

END OF TASK

FOLLOW-ON MAINTENANCE

Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

CAGING AND UNCAGING BRAKES

INITIAL SETUP:

Tools and Special Tools
Handle, socket wrench (WP 0108, Item 27)
Socket, socket wrench (WP 0108, Item 59)

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)

CAGING PARKING BRAKE

WARNING

Do not operate vehicle when brakes are caged. Caged brakes will result in loss of the parking brake and degrade braking system performance. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Air system is under pressure. Wear safety goggles and gloves. Do not disconnect any air system fitting. Hoses may whip and injure personnel, and air under pressure can penetrate skin. Failure to comply may result in serious injury or death to personnel.

When working under vehicle on brake system, ensure vehicle is on level ground and wheels are chocked correctly. Vehicle will be without parking brake, and can roll. Failure to comply may result in serious injury or death to personnel.

NOTE

This procedure should only be performed as required to complete a mission.

Plunger will stop when fully extended and seated.

Ensure brakes are fully caged to avoid further damage to vehicle.

Commander side shown; driver side similar.

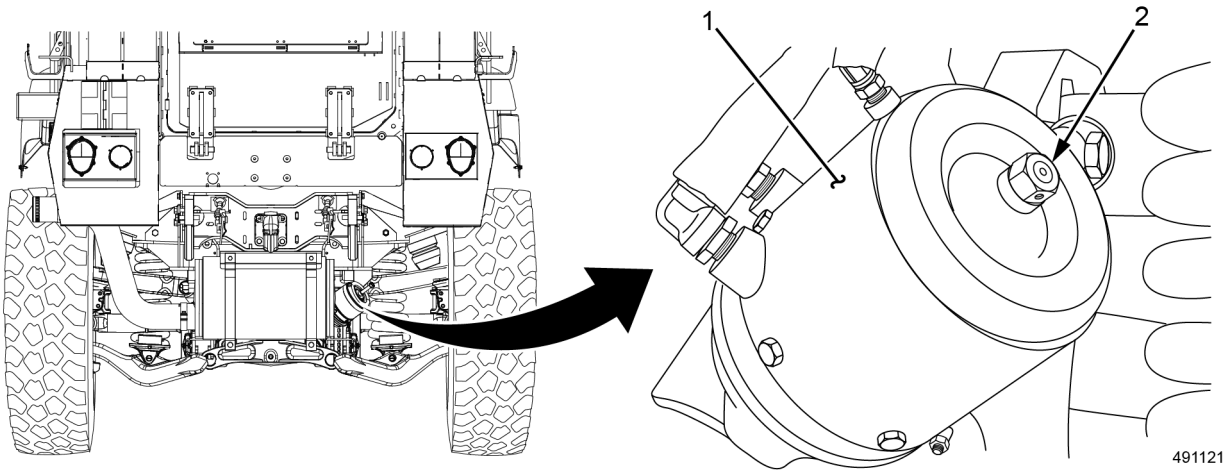


Figure 1. Brake Caging Bolt.

1. Rotate caging bolt (Figure 1, Item 2) on rear brake plunger (Figure 1, Item 1) counterclockwise until fully extended to cage brakes.
2. Repeat step 1 for driver side of vehicle.

END OF TASK

UNCAGING PARKING BRAKE

1. Rotate caging bolt (Figure 1, Item 2) on rear brake plunger (Figure 1, Item 1) clockwise until fully seated to uncage brakes.
2. Repeat step 1 for driver side of vehicle.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

POWER STEERING FLUID SERVICE

INITIAL SETUP:

Materials/Parts
- Gloves, nitrile, large (WP 0110, Item 11)
- Goggles, industrial (WP 0110, Item 13)
- Lubricating oil, engine, SAE 0W-30, -50ºF to +90ºF (all temperatures) (WP 0110, Item 17)
- Lubricating oil, engine, SAE 15W-40, 0ºF to +120ºF (-18ºC to +49ºC) (WP 0110, Item 16)
- Rag, wiping (WP 0110, Item 25)

References
- WP 0106

Equipment Condition
- Transmission set in NEUTRAL (N) (WP 0013)
- Parking brake set (WP 0013)
- Engine OFF (WP 0013)
- MAIN POWER switch OFF (WP 0013)
- Wheels chocked (WP 0013)
- Engine hood open (WP 0033)

SERVICE

WARNING

Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir / tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with Standard Operating Procedures (SOP). Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with SOP and regulations. Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

Fluids pose a slip hazard if spilled. Ensure spills are cleaned up immediately and dispose of material in accordance with SOP. Failure to comply may result in serious injury or death to personnel.

Engine fluids (oil, fuel, and coolant) may be hazardous to human health and the environment. Handle all fluids and other soiled materials (such as filters and rags) in accordance with SOP. Recycle or dispose of engine fluids, filters, and other soiled materials in accordance with SOP. Failure to comply may result in environmental damage and injury to personnel.

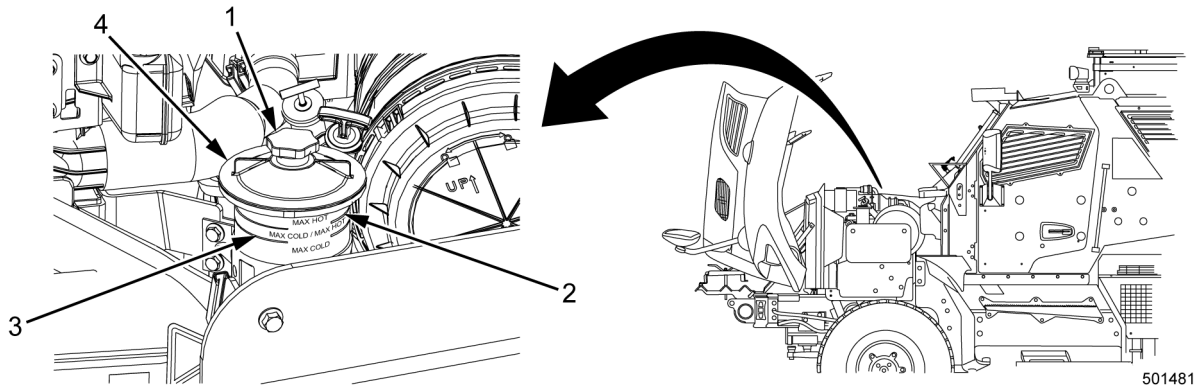


Figure 1. Power Steering Fluid Reservoir.

NOTE

Verify power steering fluid level in reservoir when engine is cold.

1. View power steering fluid level in power steering fluid reservoir (Figure 1, Item 4).
   a. If power steering fluid level is between Minimum (MIN) (COLD) line (Figure 1, Item 3) and Maximum (MAX) COLD/MIN HOT lines (Figure 1, Item 2) on power steering fluid reservoir, proceed to Follow-On Maintenance.
   b. If power steering fluid level is below MIN (COLD) line (Figure 1, Item 3) on power steering reservoir (Figure 1, Item 4), proceed to step 2.
   c. If power steering fluid level is above MAX COLD/MIN HOT line (Figure 1, Item 2) when engine is cold, notify Field Level Maintenance.
2. Remove cap (Figure 1, Item 1) from power steering fluid reservoir (Figure 1, Item 4) by turning cap counterclockwise.
3. Fill power steering fluid reservoir (Figure 1, Item 4) with power steering lubricating oil until level is between MIN (COLD) line (Figure 1, Item 3) and MAX COLD/MIN HOT lines (Figure 1, Item 2) on power steering fluid reservoir. Refer to WP 0106, Lubrication Instructions.
4. Install cap (Figure 1, Item 1) on power steering fluid reservoir (Figure 1, Item 4) by turning cap clockwise until tight.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close engine hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

WINDSHIELD WASHER SERVICE

INITIAL SETUP:

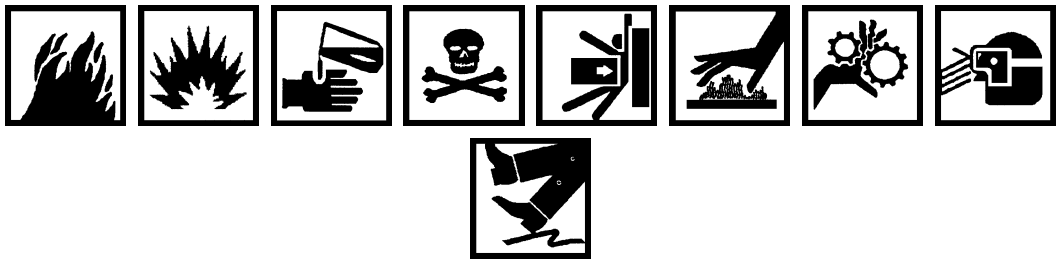
Materials/Parts
Cleaning compound, windshield washer (WP 0110, Item 6)
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

References
WP 0106

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)
Engine hood open (WP 0033)

FILL

WARNING



Refer to Army Petroleum Oils and Lubricants (POL) for information concerning storage, use, and disposal of liquids as applicable. Be sure to use drain pan when draining or adding fluids. DO NOT overfill any fluid reservoir or tank. If a fluid starts to flow out of reservoir/tank, stop IMMEDIATELY. Immediately clean up spilled fluid before proceeding with additional tasks. In the event of a spill, immediately contain, wipe, or absorb POL and dispose appropriately in accordance with Standard Operating Procedures (SOP). Handle, store, and dispose of drained fluids in accordance with SOP. Failure to comply may result in injury to personnel and environmental damage.

Engine hood is extremely heavy and requires two-person lift. Ensure that there is adequate space in front of the vehicle to open hood completely without pinning or pinching personnel between hood and any other structure. Use extreme care when working under hood and make sure it is properly supported. Failure to comply may result in serious injury or death to personnel.

Engine components become extremely hot during normal operation. Allow engine to cool completely prior to performing maintenance. Use extreme care when working in close quarters in engine compartment. Stay clear of rotating parts. Wear safety goggles, work gloves, and long sleeves or shop coat. Failure to comply may result in serious injury or death to personnel.

Fluids pose a slip hazard if spilled. Ensure spills are cleaned up immediately and dispose of material in accordance with SOP. Failure to comply may result in injury or death to personnel.

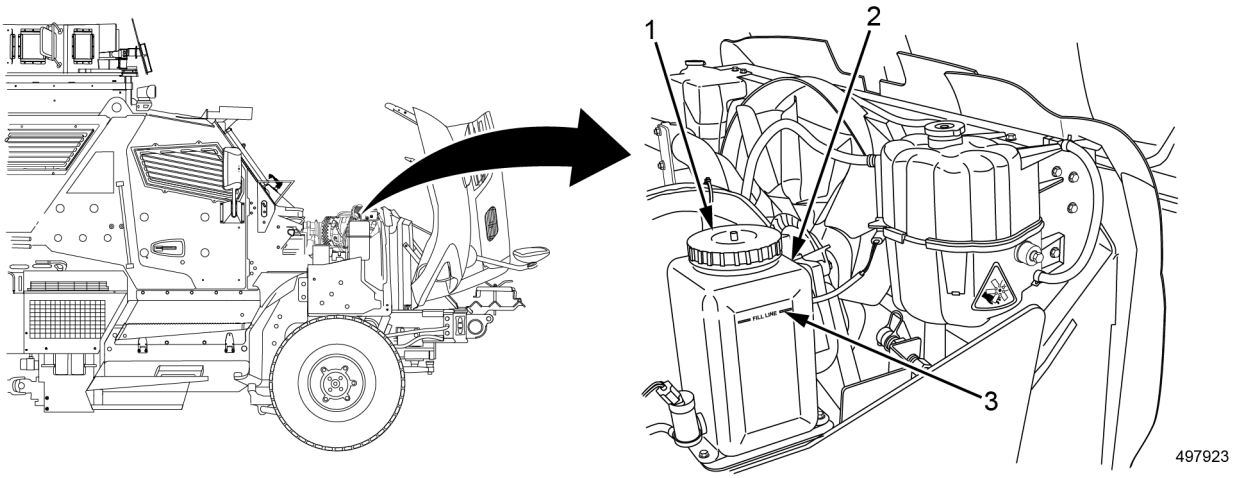


Figure 1. Windshield Washer Fluid Reservoir.

1. Turn counterclockwise to remove washer fluid reservoir cap (Figure 1, Item 1) from windshield washer fluid reservoir (Figure 1, Item 2).
2. Add windshield washer cleaning compound to windshield washer fluid reservoir (Figure 1, Item 2) until fluid level reaches FILL line (Figure 1, Item 3). Refer to WP 0106, Lubrication Instructions. Do not overfill.
3. Turn clockwise to install washer fluid reservoir cap (Figure 1, Item 1) on windshield washer fluid reservoir (Figure 1, Item 2) and secure.

END OF TASK

FOLLOW-ON MAINTENANCE

1. Close engine hood (WP 0033).
2. Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

AUTOMATIC FIRE EXTINGUISHING SYSTEM (AFES) BATTERY BACKUP UNIT (BBU) DISABLE AND ENABLE

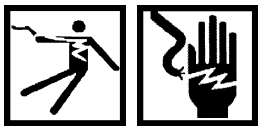
INITIAL SETUP:

Materials/Parts
Bag, plastic (WP 0110, Item 4)
Marker, identification (WP 0110, Item 19)
Strap, line supporting (WP 0110, Item 27)
Tape, pressure sensitive adhesive (WP 0110, Item 28)

References
WP 0011
WP 0013
WP 0048

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)

WARNING



Use extreme caution when testing or working on or around electrical circuits. Always assume that electrical circuits are live. Electrical shock can occur upon contact with voltage high enough to cause current flow through muscles or nerves. On Direct Current (DC) systems, generally 1 milliamp (mA) of current can be felt, 5 mA can cause severe pain, 15 mA can cause loss of muscle control, and 70 mA can be fatal. Wear protective clothing; ensure skin, clothing, and surrounding areas are dry; do not wear jewelry; and touch only the insulated, nonmetallic parts of electrical components and testing equipment. To prevent electrical arcing, avoid shorting electrical test probes and jumper wires. Electrical arcing can cause bright flashes of light, capable of causing temporary blindness. If electrical injury occurs, immediately shut off power supply and seek medical assistance. Failure to comply may result in serious injury or death to personnel.

DISABLE

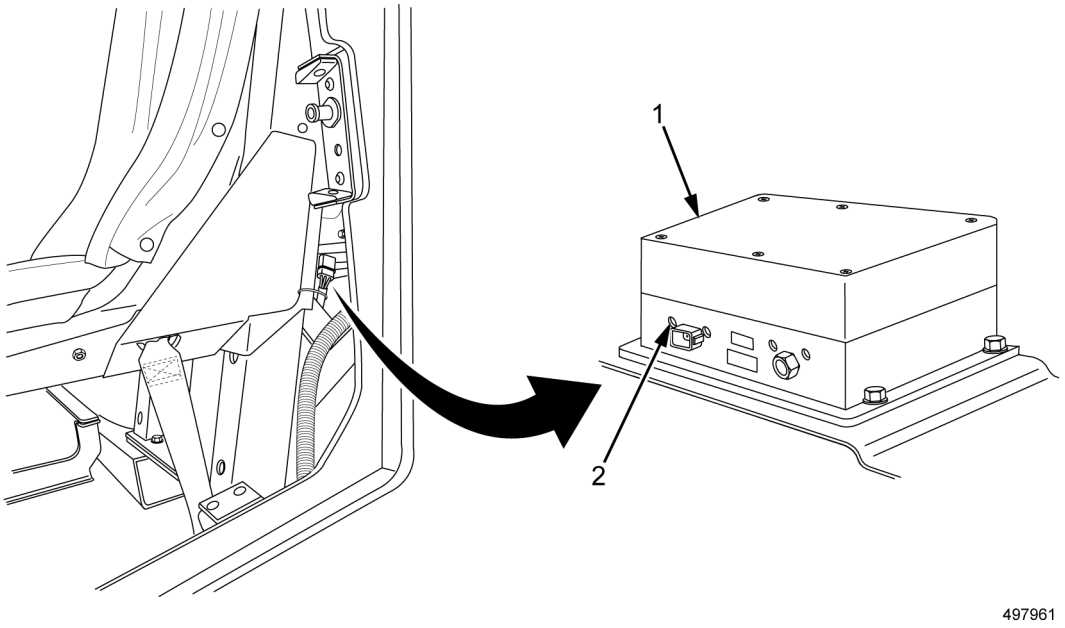


Figure 1. AFES BBU Connected.

1. Disconnect harness connector end (Figure 1, Item 2) from Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) connector (Figure 1, Item 1).

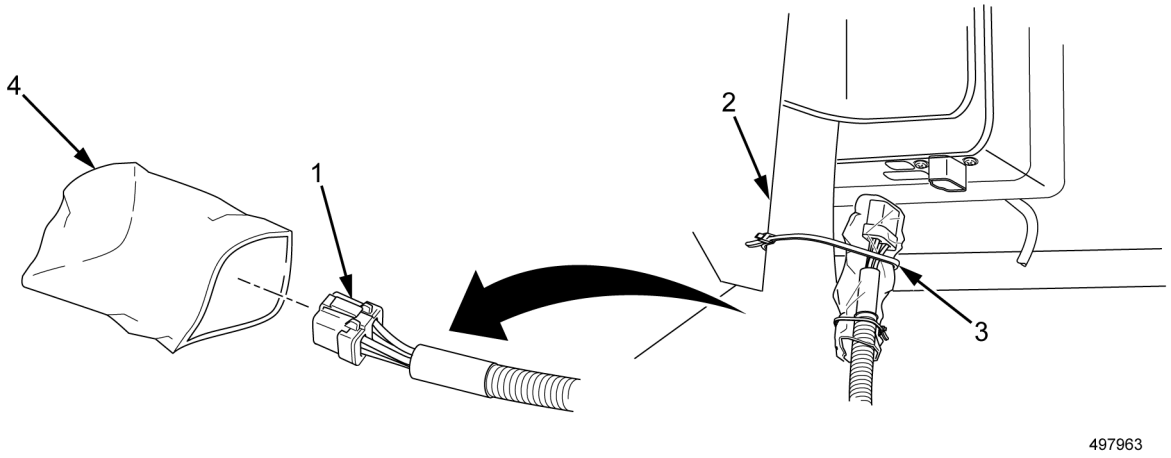


Figure 2. Plastic Bag and Cable Lock Strap.

NOTE

Steps 2 through 5 are for long-term vehicle storage only.

2. Cover harness connector end (Figure 2, Item 1) with plastic bag (Figure 2, Item 4).
3. Install harness connector (Figure 2, Item 1) and plastic bag (Figure 2, Item 4) on seat frame (Figure 2, Item 2) with cable lock strap (Figure 2, Item 3).

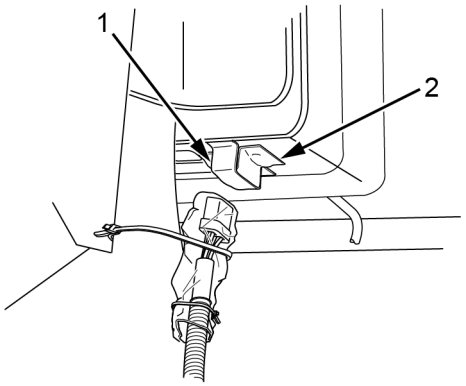


Figure 3. Masking Tape on AFES BBU Connector.

4. Cover connector (Figure 3, Item 1) with masking tape (Figure 3, Item 2).

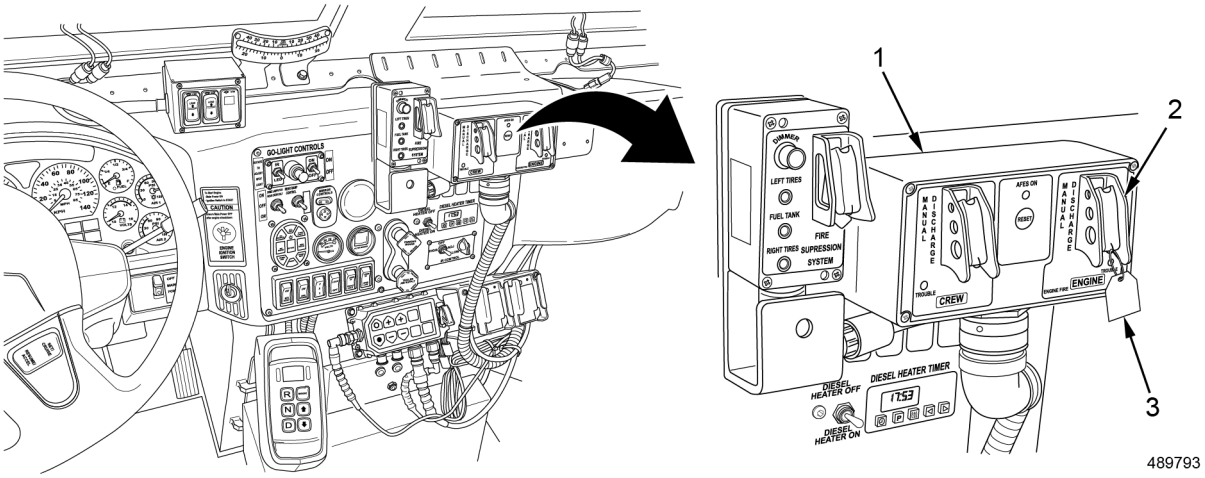


Figure 4. AFES Control Panel with Wire Tag Attached.

5. Fasten wire tag (Figure 4, Item 3) through hole in switch guard (Figure 4, Item 2) on AFES control panel (Figure 4, Item 1), stating AFES BBU has been disconnected for storage.

END OF TASK

ENABLE

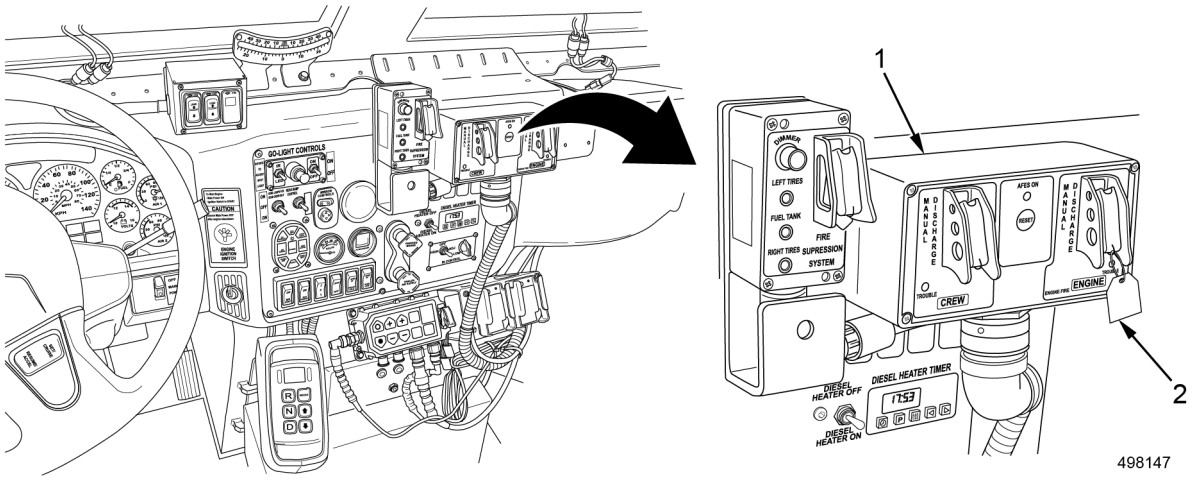


Figure 5. AFES Control Panel with Wire Tag Removal.

NOTE

Steps 1 through 4 are performed after long term storage has been implemented.

1. Remove wire tag (Figure 5, Item 2) from AFES control panel (Figure 5, Item 1).
2. Discard wire tag (Figure 5, Item 2).

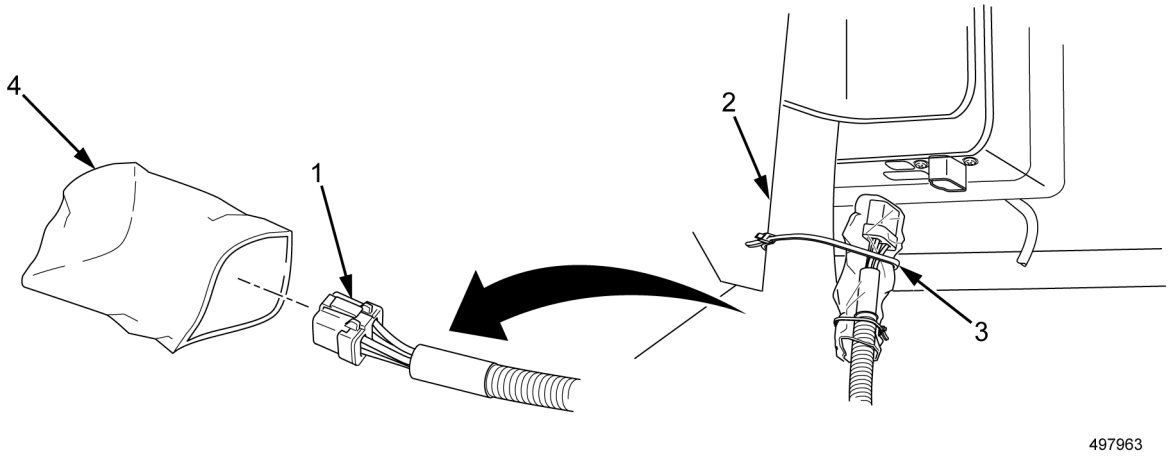


Figure 6. Plastic Bag Removal.

3. Remove cable lock strap (Figure 6, Item 3) from harness connector (Figure 6, Item 1) and seat frame bar (Figure 6, Item 2).
4. Discard cable lock strap (Figure 6, Item 3).
5. Remove harness connector (Figure 6, Item 1) from plastic bag (Figure 6, Item 4).
6. Discard plastic bag (Figure 6, Item 4).

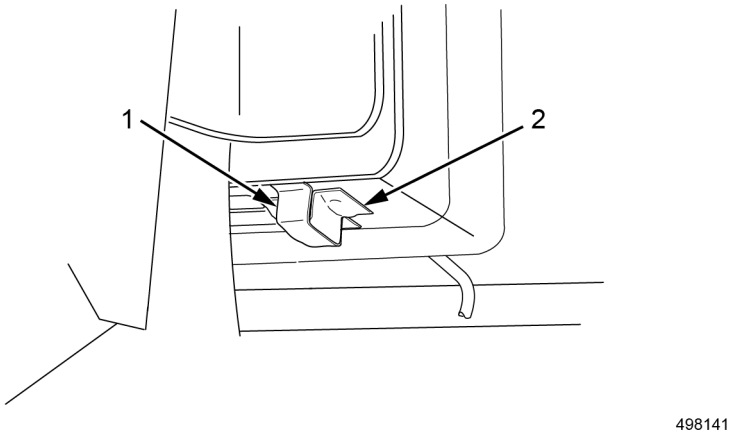


Figure 7. Masking Tape Removal.

7. Remove masking tape (Figure 7, Item 2) from connector (Figure 7, Item 1).
8. Discard masking tape (Figure 7, Item 2).

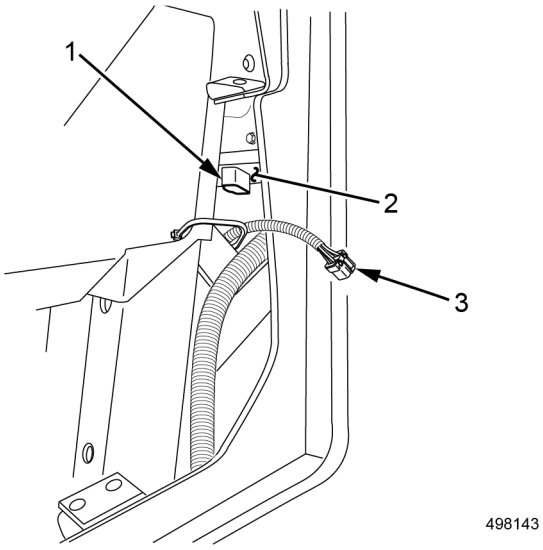


Figure 8. AFES BBU Connector Harness.

9. Connect harness connector (Figure 8, Item 3) to AFES BBU connector (Figure 8, Item 1) on underside of AFES BBU Unit (Figure 8, Item 2).

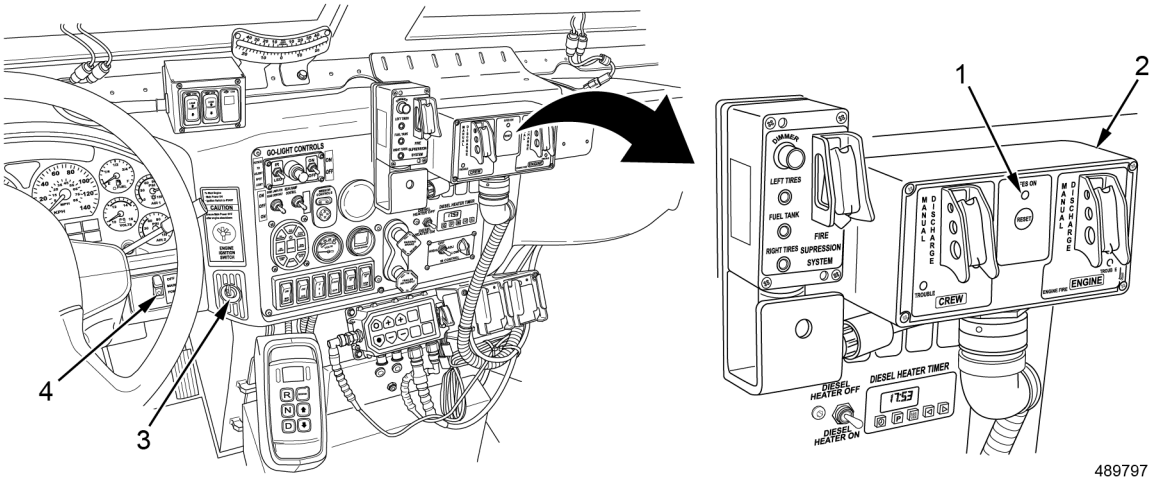


Figure 9. AFES Control Panel.

WARNING

Ensure BBU is fully charged. Operating the vehicle without BBU fully charged may result in the AFES not operating in the event of a power failure. If BBU does not charge, notify Field Level Maintenance. Failure to comply may result in serious injury to personnel.

NOTE

AFES BBU GREEN Light Emitting Diode (LED) indicates the battery is charged sufficiently, and vehicle battery voltage to the BBU is greater than 18 volts.

AFES BBU RED LED indicates vehicle battery voltage to the BBU is less than 18 volts, and AFES BBU battery voltage is greater than 21 volts.

AFES BBU is located behind the driver seat and has a three year life. Operating the vehicle with an expired battery is not recommended.

10. Turn MAIN POWER switch (Figure 9, Item 4) ON.
11. Turn ignition switch (Figure 9, Item 3) to RUN.
12. Verify AFES ON LED (Figure 9, Item 1) illuminates GREEN on AFES control panel (Figure 9, Item 2).

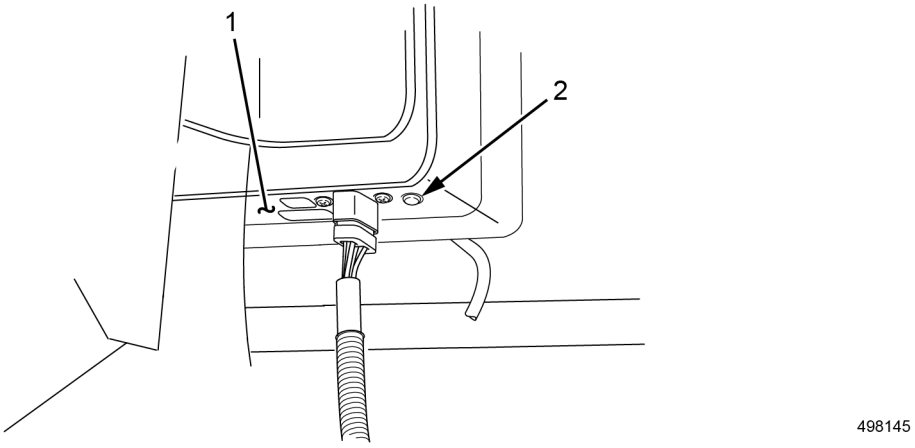


Figure 10. BBU LED Indicator.

13. Verify AFES BBU LED (Figure 10, Item 2) on battery (Figure 10, Item 1) is GREEN.
    a. If AFES BBU LED illuminates GREEN, proceed to step 21.
    b. If AFES BBU LED does not illuminate GREEN, proceed to step 14.
    c. If AFES BBU LED illuminates RED, vehicle battery voltage to the BBU is less than 18 volts, notify Field Level Maintenance.
14. Start vehicle engine. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
15. Set engine throttle at high idle. Refer to WP 0048, Operation Under Unusual Conditions - Throttle Idle Control.
16. Run engine for at least 20 minutes.
17. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
18. Turn MAIN POWER switch to ON.
19. Turn ignition switch to ON.
20. Verify AFES BBU LED (Figure 10, Item 2) is GREEN. If AFES BBU LED does not illuminate GREEN, notify Field Level Maintenance.
21. Turn ignition switch (Figure 9, Item 3) to OFF.
22. Turn MAIN POWER switch (Figure 9, Item 4) OFF.

END OF TASK

FOLLOW-ON MAINTENANCE

Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

VEHICLE TOWING

INITIAL SETUP:

Tools and Special Tools
Hose assembly, nonmetallic (WP 0108, Item 28)
Hose assembly, nonmetallic (WP 0108, Item 29)
Coupler, draw bar ring (2) (WP 0109)
Tow bar, motor vehicle (WP 0109)
Wire rope assembly, single leg (WP 0109)

Materials/Parts
Gloves, leather (WP 0110, Item 10)
Goggles, industrial (WP 0110, Item 13)

Personnel Required
Crewmember - (4)

References
WP 0002
WP 0004
WP 0011
WP 0012
WP 0013
WP 0035
WP 0053
WP 0054
WP 0099

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)

FLAT TOWING HOOKUP PREPARATION

WARNING

If brakes of disabled vehicle are inoperable, do not flat tow disabled vehicle. Notify Field Level Maintenance. Do not move towing vehicle without assistance of ground guide. Ground guide must be visible to operator at all times. When using wrecker to tow a vehicle with nonfunctional brakes, use extreme caution and reduce speed accordingly. Ensure that all personnel are clear of vehicle before removing wheel chocks and starting to tow vehicle. The maximum speed limit on unpaved roads when towing is 15 mph (24 kph). Terrain, weather, and other conditions may require reduced speeds. Avoid sharp turns. On paved roads, speeds may be increased to 25 mph (40 kph) if conditions permit. Prior to disconnecting tow bar, ensure that vehicles are on level surface with wheels chocked. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

When performing like-vehicle towing operations, never proceed up or down grades greater than 20 percent. Towing over steep grades can cause vehicle to become unstable or roll over. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

If disabled vehicle has no electrical power at the MAIN POWER switch or air pressure through the quick disconnect coupling assemblies, cease towing operation and notify Field Level Maintenance. Failure to comply may result in serious injury or death to personnel and/or damage to vehicle.

CAUTION

Disabled vehicle must not be towed more than 10 mi (16 km) with propeller shaft installed. Transmission on disabled vehicle will overheat. Failure to comply may cause damage to equipment.

Do not open rear door/ramp while towing a vehicle, or door/ramp may impact the vehicle being towed. Failure to comply may cause damage to equipment.

NOTE

Disabled vehicle must not exceed gross vehicle weight of towing vehicle. Refer to WP 0002, Equipment Description and Data.

Tires should be inflated to highway pressure or damage to tires may result. Refer to WP 0035, Operation Under Usual Conditions - Central Tire Inflation System (CTIS) Operation.

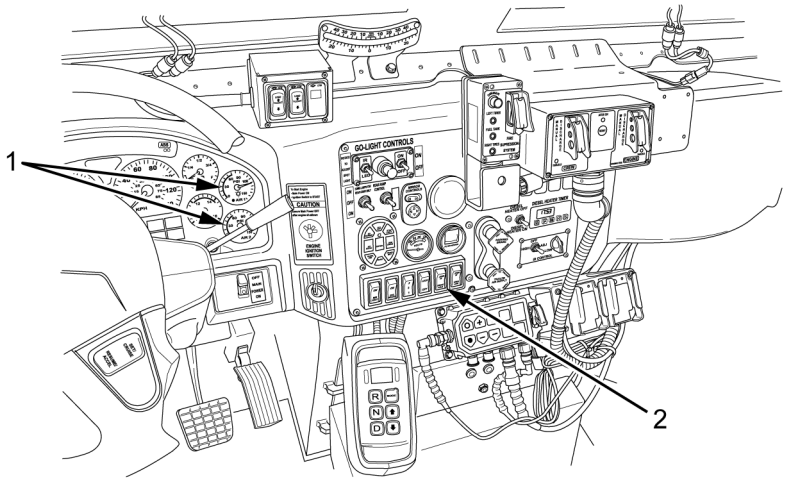


Figure 1. Towing Preparation Controls.

1. Start disabled vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
2. Verify FRONT AXLE switch (Figure 1, Item 2) is OFF.

NOTE

Normal air system operating pressure is between 110 and 130 psi (758 and 896 kPa). If operating pressure drops below 45 psi (310 kPa), spring brakes will apply and vehicle cannot be moved.

3. Allow air pressure of disabled vehicle to build until air pressure gauges (Figure 1, Item 1) read between 110 and 130 psi (758 and 896 kPa). If air pressure will not reach normal operating pressure, notify Field Level Maintenance.
4. Verify spring brakes on disabled vehicle are uncaged,. Refer to WP 0099, Caging and Uncaging Brakes. If spring brakes can not be uncaged, notify Field Level Maintenance
5. Remove winch cable hook from front towing eye on disabled vehicle. Refer to WP 0054, Operation Under Unusual Conditions - Winch Operation.
6. Shut down disabled vehicle. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

END OF TASK

TOW BAR AND TOW BAR ADAPTER CONNECTION - DISABLED VEHICLE

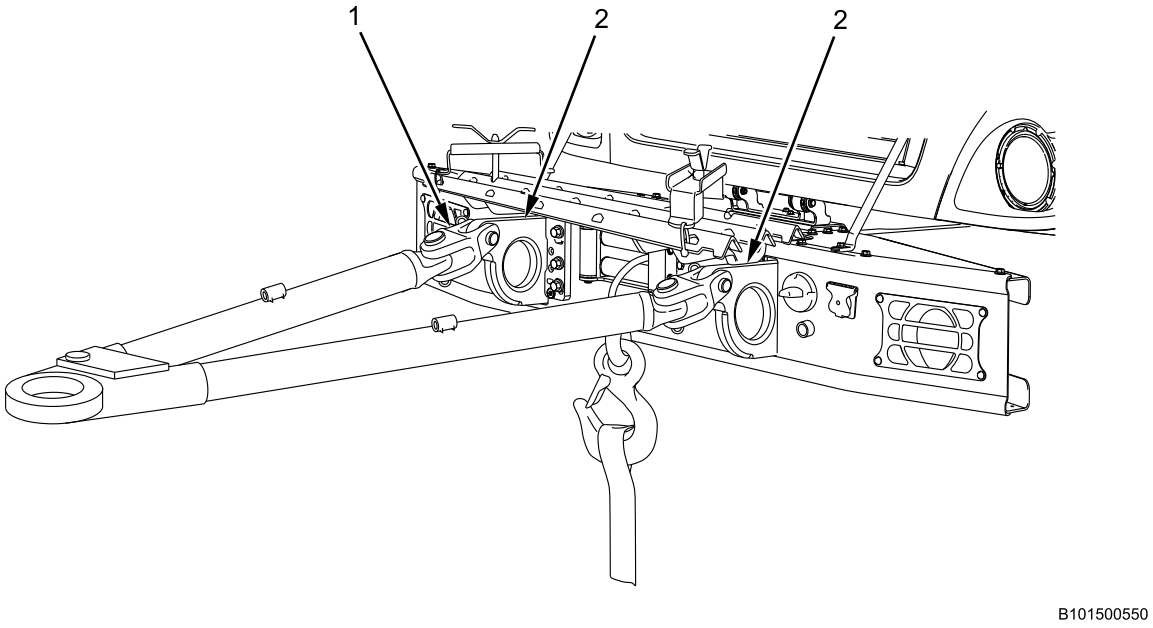


Figure 2. Tow Bar and Tow Bar Adapter Connection - Disabled Vehicle.

WARNING

Tow bar weights 300 lb (136 kg). Do not attempt to lift tow bar without assistants or suitable lifting device. Failure to comply may result in serious injury or death to personnel.

NOTE

Tow bar adapters should be pre-assembled onto tow bar.

Tow bar adapters are mounted in the upper, smaller diameter tow eyes.

1. With assistants, install tow bar with tow bar adapters (Figure 2, Item 1) in tow eyes (Figure 2, Item 2) on disabled vehicle.

END OF TASK

PINTLE TOW BAR CONNECTION - TOWING VEHICLE

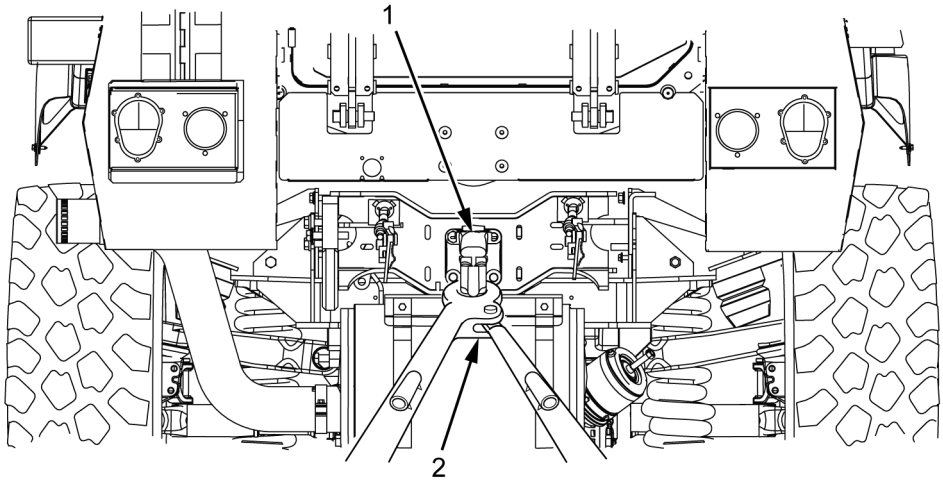


Figure 3. Pintle Tow Bar Connection - Towing Vehicle.

WARNING

Do not position hands near the pintle hook while connecting or removing towed equipment. Failure to comply may result in serious injury or death to personnel.

Do not attempt to lift tow bar without assistants or suitable lifting device. Use extreme caution when opening pintle hook , as tow bar could spring out of coupler. Failure to comply may result in serious injury or death to personnel.

1. With assistants, connect tow bar lunette eye (Figure 3, Item 2) to pintle hook (Figure 3, Item 1) on towing vehicle.

END OF TASK

ELECTRICAL CABLE AND GLADHANDS CONNECTIONS

WARNING

Ensure service brake lights, emergency flashers, and turn signals on disabled vehicle operate in coordination with the towing vehicle. Failure to comply may result in serious injury or death to personnel.

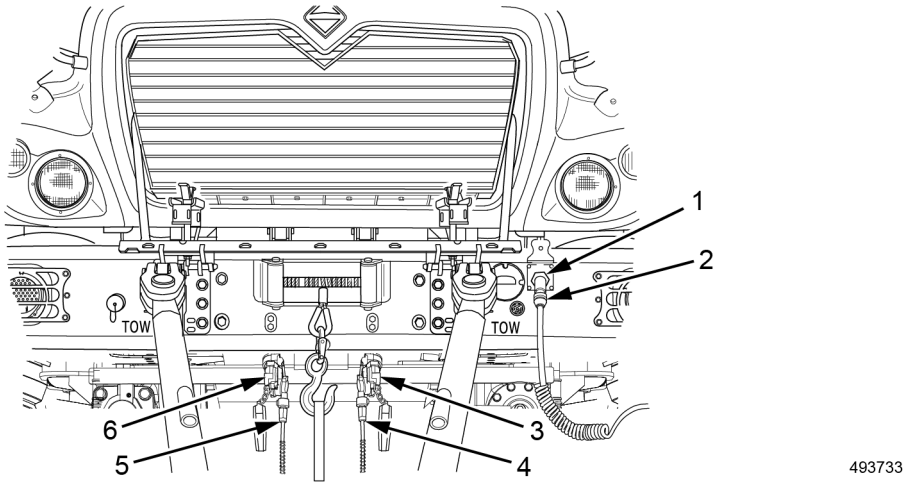


Figure 4. Electrical Cable and Gladhand Air Lines – Disabled Vehicle.

1. Connect electrical cable (Figure 4, Item 2) to connector (Figure 4, Item 1) on disabled vehicle.

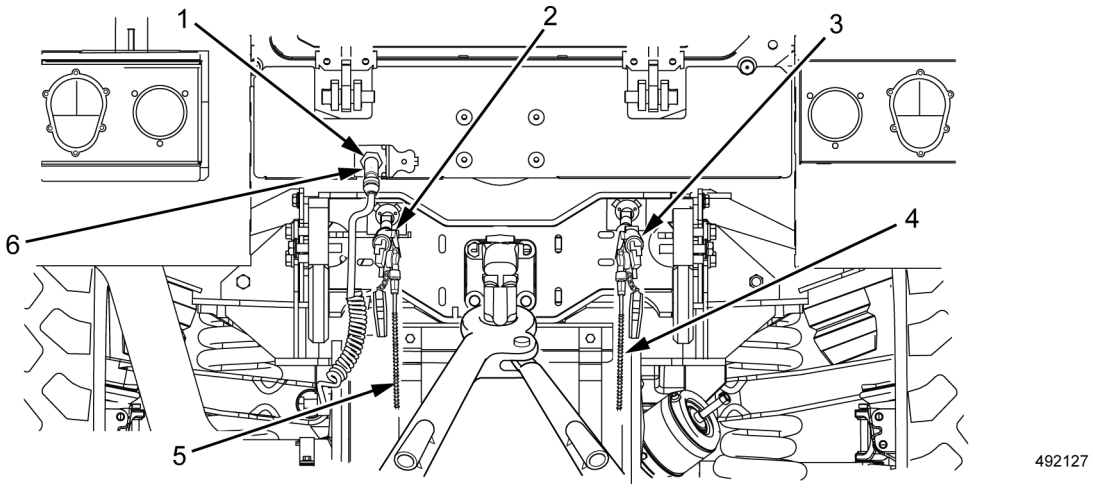


Figure 5. Electrical Cable and Gladhand Air Lines - Towing Vehicle.

2. Connect electrical cable (Figure 5, Item 6) to connector (Figure 5, Item 1) on towing vehicle.
3. Connect RED EMERGENCY air line (Figure 5, Item 5) to EMERGENCY gladhand (Figure 5, Item 2) on towing vehicle.
4. Connect RED EMERGENCY air line (Figure 4, Item 4) to EMERGENCY gladhand (Figure 4, Item 3) on disabled vehicle.
5. Connect BLUE SERVICE air line (Figure 5, Item 4) to SERVICE gladhand (Figure 5, Item 3) on towing vehicle.
6. Connect BLUE SERVICE air line (Figure 4, Item 5) to SERVICE gladhand (Figure 4, Item 6) on disabled vehicle.
7. Start engine in towing vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
8. Push in TRAILER AIR SUPPLY switch on towing vehicle. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
9. Remove wheel chocks from disabled vehicle. Refer to WP 0011, Operation Under Usual Conditions - Engine Start Procedure - Above 32°F (0°C).
10. Release parking brake on disabled vehicle. Refer to WP 0012, Operation Under Usual Conditions - Normal Driving Procedures.
11. Tow disabled vehicle. Refer to WP 0053, Operation Under Unusual Conditions - Driver Towing Operation.

END OF TASK

ELECTRICAL CABLE AND GLADHANDS DISCONNECT

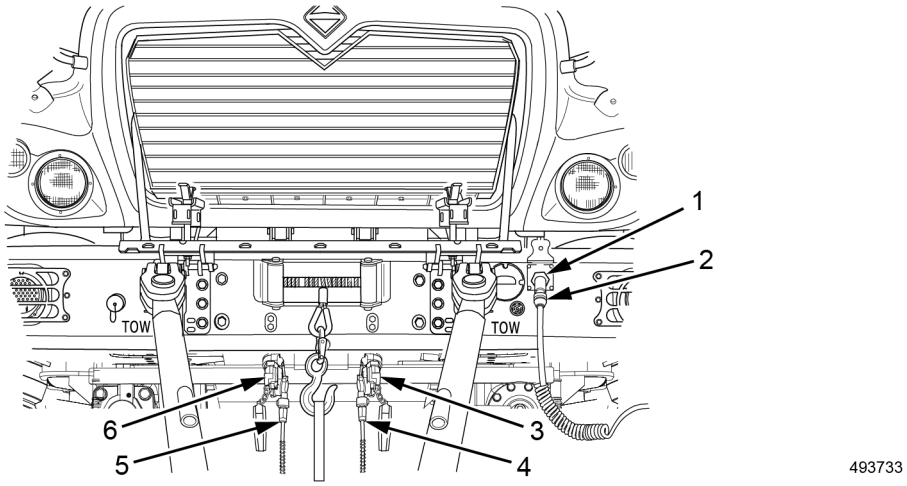


Figure 6. Electrical Cable and Gladhand Air Line Disconnect – Disabled Vehicle.

1. Disconnect electrical cable (Figure 6, Item 2) from connector (Figure 6, Item 1) on disabled vehicle.

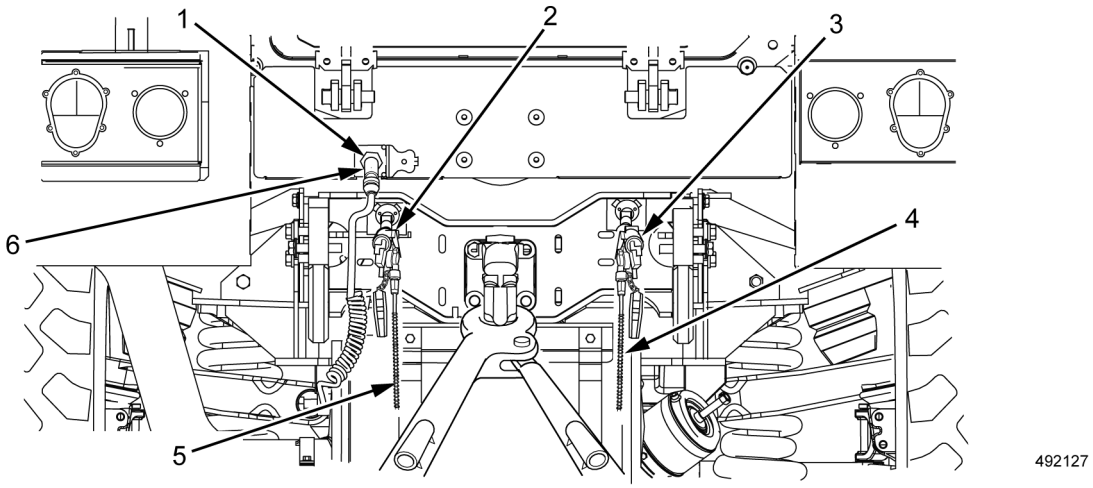


Figure 7. Electrical Cable and Gladhand Air Lines Disconnect - Towing Vehicle.

2. Pull out TRAILER AIR SUPPLY switch on towing vehicle. Refer to WP 0004, Description and Use of Operator Controls and Indicators.
3. Disconnect electrical cable (Figure 7, Item 6) from connector (Figure 7, Item 1) on towing vehicle.
4. Disconnect RED EMERGENCY air line (Figure 7, Item 5) from EMERGENCY gladhand (Figure 7, Item 2) on towing vehicle.
5. Disconnect RED EMERGENCY air line (Figure 6, Item 4) from EMERGENCY gladhand (Figure 6, Item 3) on disabled vehicle.
6. Disconnect BLUE SERVICE air line (Figure 7, Item 4) from SERVICE gladhand (Figure 7, Item 3) on towing vehicle.
7. Disconnect BLUE SERVICE air line (Figure 6, Item 5) from SERVICE gladhand (Figure 6, Item 6) on disabled vehicle.

END OF TASK

PINTLE TOW BAR DISCONNECT - TOWING VEHICLE

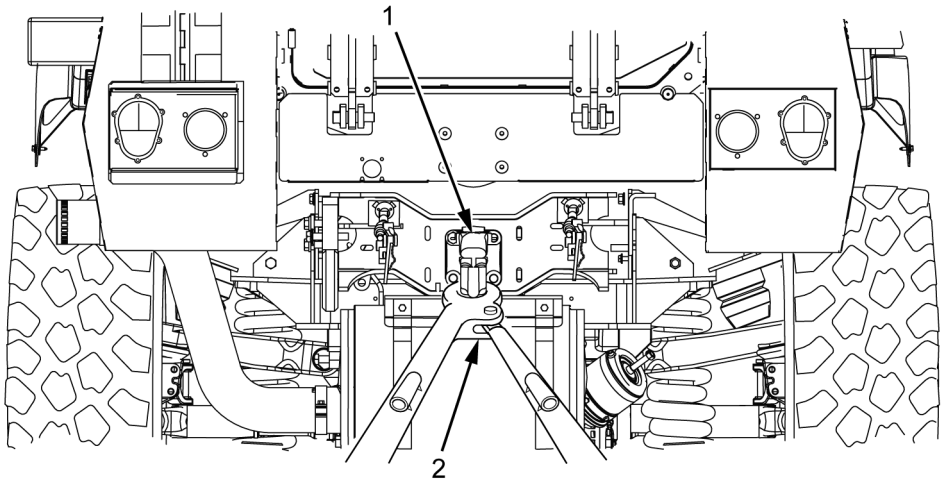


Figure 8. Pintle Tow Bar Disconnect - Towing Vehicle.

WARNING

Keep hands away from pintle hook when aligning lunette eye or connecting and disconnecting tow bar. Hands and fingers can get caught and crushed between pintle hook and tow bar. Failure to comply may result in serious injury or death to personnel.

Tow bar weights 300 lb (136 kg). Do not attempt to lift tow bar without assistants or suitable lifting device. Failure to comply may result in serious injury or death to personnel.

1. With assistants, disconnect tow bar lunette eye (Figure 8, Item 2) from pintle hook (Figure 8, Item 1) on towing vehicle.

END OF TASK

TOW BAR AND TOW BAR ADAPTER DISCONNECT

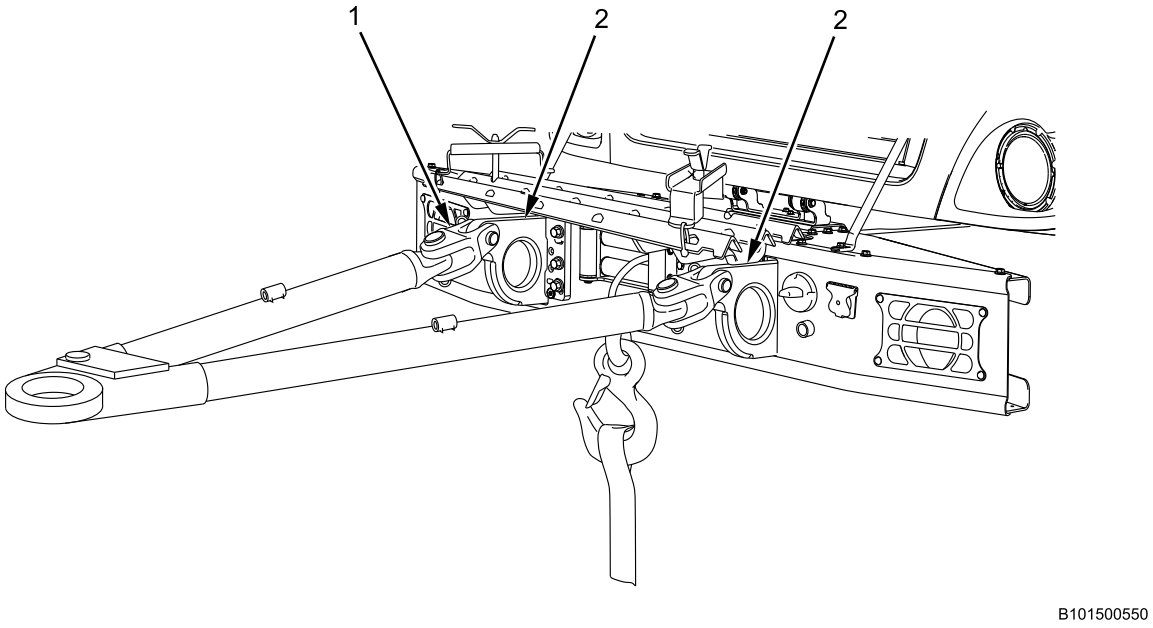


Figure 9. Tow Bar and Tow Bar Adapter - Disabled Vehicle.

1. With assistants, disconnect tow bar with tow bar adapters (Figure 9, Item 1) from tow eyes (Figure 9, Item 2) on disabled vehicle.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

VEHICLE PARKING

INITIAL SETUP:

References
WP 0013
FM 21-60

Equipment Condition
Driver seat adjusted (WP 0006)
Seat belt buckled (WP 0009)
Engine started (WP 0011)

VEHICLE PARKING

WARNING

Avoid driving or parking on soft shoulders. Use care when next to water or in rain-soaked soil. Soft shoulders can collapse. Vehicles can roll over, causing serious injury or death to personnel.

Do not park vehicle on longitudinal slopes greater than 30 percent. Parking on grades in excess of 30 percent slope can lead to parking brake failure, resulting in vehicle rolling forward or backward, which could lead to an accident. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

Driver vision is limited. When maneuvering through or attempting to park vehicle in congested or confined areas, always use ground guides. Refer to FM 21-60 Visual Signals. Failure to comply may result in serious injury or death to personnel and/or damage to equipment.

1. Position vehicle on level, hard surface, leaving enough area around vehicle for access.
2. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.

END OF TASK

PARKING IN EXTREME COLD

CAUTION

Operator must take every precaution to prevent snow from blowing into engine when parked. Snow will melt and later form ice that can jam engine controls.

1. Position vehicle so vehicle does not face into the wind, if possible.
2. Position vehicle on level, hard surface, leaving enough area around the vehicle for access.
3. Shut down engine. Refer to WP 0013, Operation Under Usual Conditions - Engine Shutdown.
4. Clean snow off vehicle, when applicable.

END OF TASK

END OF WORK PACKAGE

CREW MAINTENANCE

VEHICLE HOISTING POINTS

INITIAL SETUP:

References
WP 0001
WP 0027
WP 0074

Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)

HOISTING

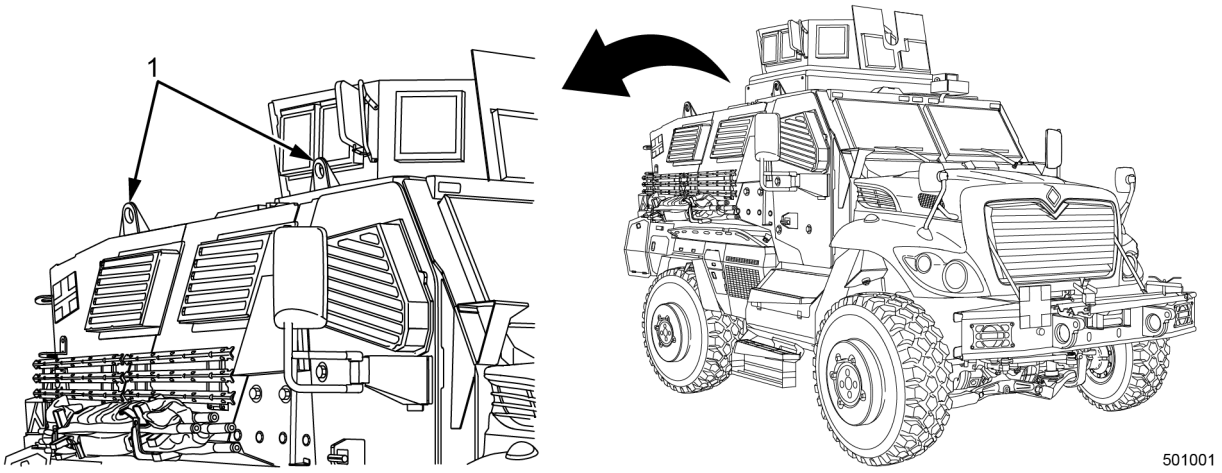


Figure 1. Lift Eyes.

CAUTION

Objective Gunners Protection Kit (OGPK) must be locked in forward position when hoisting vehicle so OGPK does not spin or rub against chains which may cause damage to the vehicle.

NOTE

Commander side shown; driver side similar.

1. Lift eyes (Figure 1, Item 1) are provided on both sides of vehicle for attaching cables to lift vehicle.
2. Inspect lift eyes (Figure 1, Item 1) for damage or corrosion. For Corrosion Prevention Control (CPC) criteria refer to WP 0001, General Information.
3. Ensure OGPK is locked in forward position. Refer to WP 0027, Operation Under Usual Conditions - Objective Gunners Protection Kit (OGPK) Operation.
4. Ensure all internal and external equipment is secure. Refer to WP 0074, On-Vehicle Equipment Load Plan.

END OF TASK

FOLLOW-ON MAINTENANCE

Remove wheel chocks (WP 0011).

END OF WORK PACKAGE

CREW MAINTENANCE

LUBRICATION INSTRUCTIONS

INITIAL SETUP:

Tools and Special Tools
Adapter, grease (WP 0108, Item 1)
Adapter, grease gun coupling (WP 0108, Item 2)
Lubricating gun, hand (WP 0108, Item 34)
Oiler, hand held (WP 0108, Item 38)

Materials/Parts
Antifreeze, ethylene glycol, type 1B (WP 0110, Item 1)
Antifreeze, ethylene glycol, type 1C (WP 0110, Item 2)
Cleaning compound, windshield (WP 0110, Item 6)
Gloves, nitrile, large (WP 0110, Item 11)
Goggles, industrial (WP 0110, Item 13)
Grease, automotive and artillery (WP 0110, Item 15)
Lubricating oil, engine SAE 15W-40, 0°F to 120°F (-18°C - +49°C) (WP 0110, Item 16)
Lubricating oil, engine crankcase SAE 0W-30, -50°F to +90°F (all temperatures) (WP 0110, Item 17)
Lubricating oil, engine SAE 10W, -10°F to +120°F (-23°C - +49°C) (WP 0110, Item 18)
Rag, wiping (WP 0110, Item 25)

Equipment Condition
Transmission set in NEUTRAL (N) (WP 0013)
Parking brake set (WP 0013)
Engine OFF (WP 0013)
MAIN POWER switch OFF (WP 0013)
Wheels chocked (WP 0013)
Hood opened (WP 0033)

WARNING

Rags saturated with solvent cleaning compound, petroleum, or other flammable contaminants must be disposed of in accordance with Standard Operating Procedures (SOP). Keep soiled rags away from open flame and/or ignition sources because they can ignite and burn. Seek medical attention in the event of an injury. Failure to comply may result in injury or death to personnel.

CAUTION

Over application of grease can cause dust boot to rupture. Failure to comply may result in damage to equipment.

INTRODUCTION

This work package contains all lubrication services to be performed on the vehicle by the operator. Lubrication intervals are based on normal operation. Lubricate more frequently as applicable during constant use and less frequently during inactive periods. Use the correct grade of lubricant for climate and seasonal temperature expected.

To use this work package, refer to Figures 1 through 3 for overviews of body and chassis lubrication services to be performed. Each service is named. The type of fluid or lubricant to be used and the method of application appear in a symbol that defines when the service should be performed. Figures 4 through 25 are detailed figures that show specifics of the service identified in the overview figures.

Beneath Figures 1 through 3 are legends that identify the type of fluid or lubricant to be used. An adjacent table shows the symbol, defines its frequency, and identifies method of application icons. Frequency intervals are as follows:

Before/After — These services are performed in conjunction with Preventive Maintenance Checks and Services (PMCS) Before and After checks, which are performed prior to operating and after operating the vehicle.

During — These services are performed in conjunction with PMCS During checks, which are performed while the vehicle components or systems are operating.

Monthly — These services are performed monthly.

GENERAL LUBRICATION INSTRUCTIONS

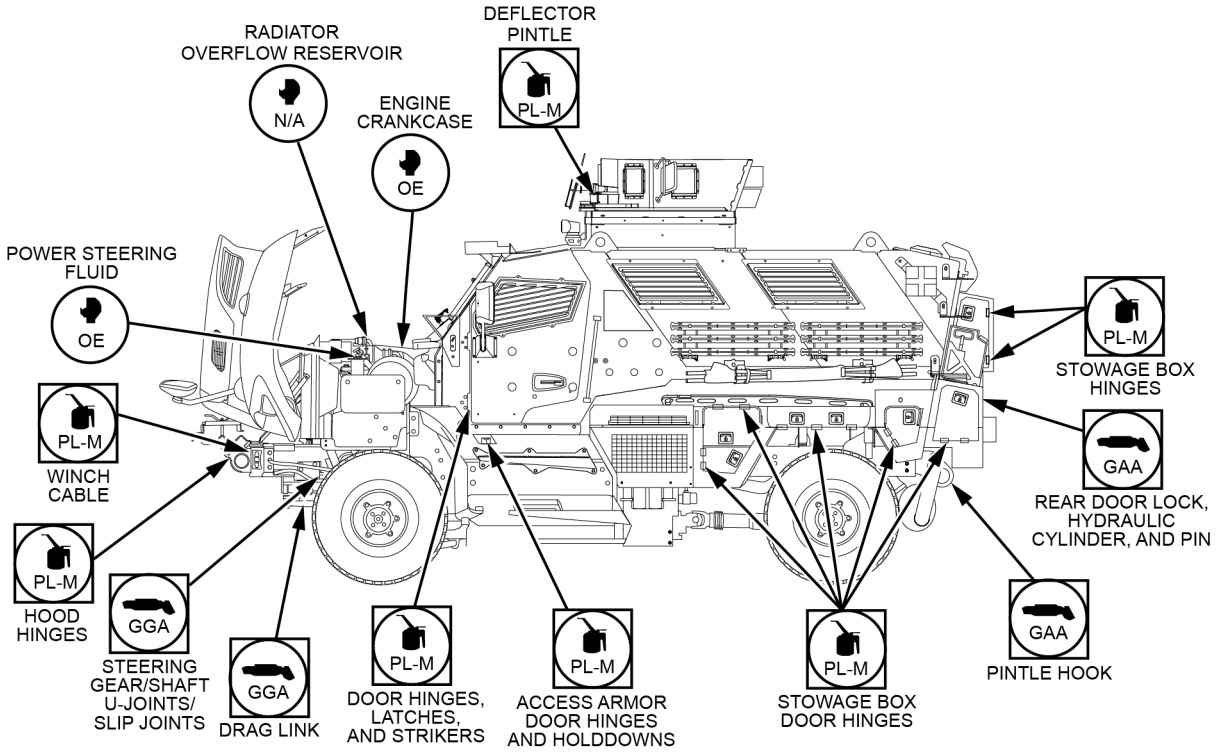


TABLE OF LUBRICANTS

ID	SPECIFICATIONS	TYPE OF LUBRICANT
GAA	MIL-PRF-10924	GREASE ARTILLERY, AND AUTOMOTIVE
PL-M	MIL-PRF-3150	OIL
OE	MIL-PRF-2104	OIL
N/A	A-A-52624A	COOLANT-ANTIFREEZE

SYMBOLS	FREQUENCY
	BEFORE / AFTER
	MONTHLY

METHOD OF APPLICATION	
	GREASE GUN
	OIL CAN
	HAND

496021

Figure 1. Body Lubrication Services Overview (Driver Side).

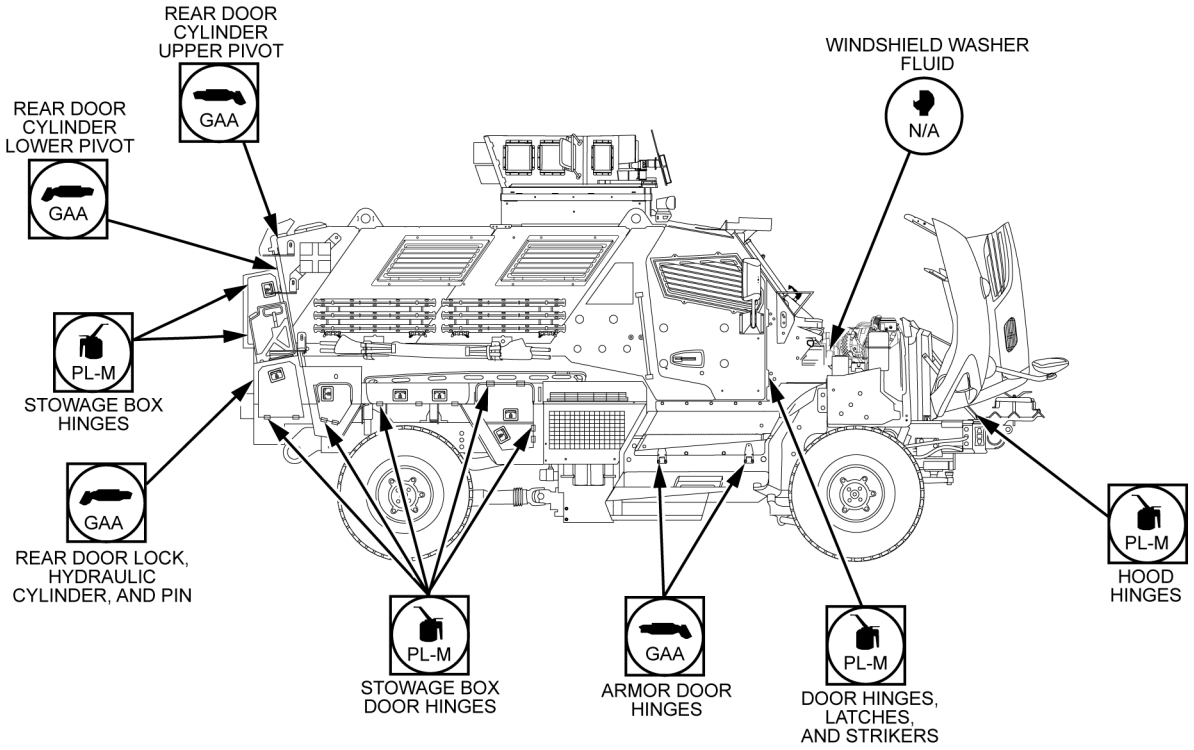


TABLE OF LUBRICANTS

ID	SPECIFICATIONS	TYPE OF LUBRICANT
GAA	MIL-PRF-10924	GREASE ARTILLERY, AND AUTOMOTIVE
PL-M	MIL-PRF-3150	OIL
N/A	A-A-59664A	WINDSHIELD WASHER

SYMBOLS	FREQUENCY
	BEFORE / AFTER
	MONTHLY

METHOD OF APPLICATION	
	GREASE GUN
	OIL CAN
	HAND

510441

Figure 2. Body Lubrication Services Overview (Commander Side).

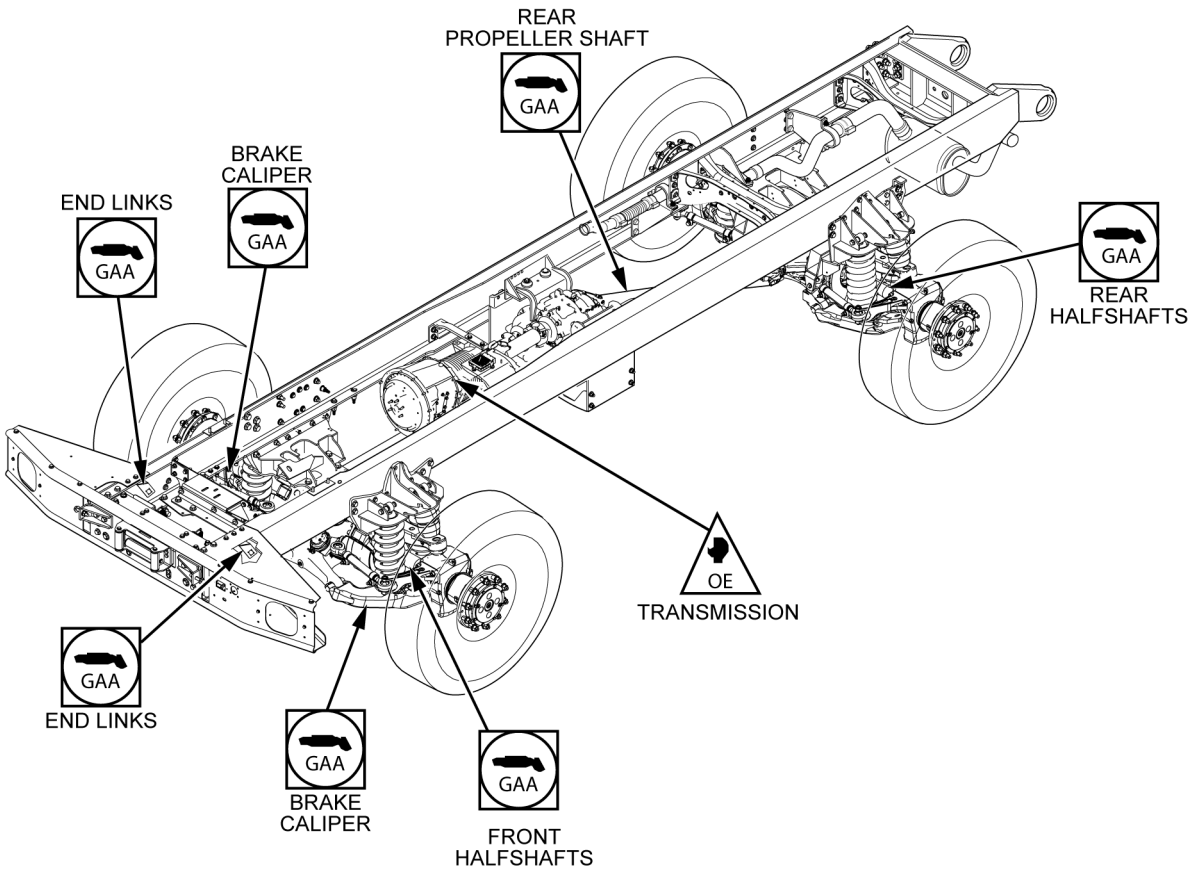


TABLE OF LUBRICANTS		
ID	SPECIFICATIONS	TYPE OF LUBRICANT
GAA	MIL-PREF-10924	GREASE ARTILLERY AND AUTOMOTIVE
OE	MIL-PREF-2104	OIL

SYMBOLS	FREQUENCY
△	BEFORE / DURING
○	MONTHLY

METHOD OF APPLICATION	
	GREASE GUN
	HAND

496023

Figure 3. Chassis Lubrication Services Overview.

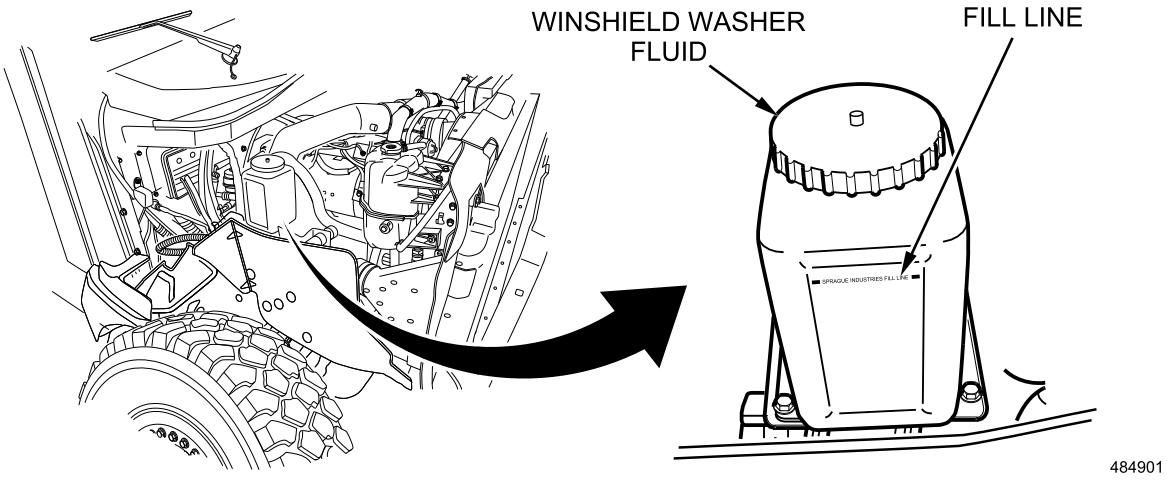


Figure 4. Windshield Washer Fluid.

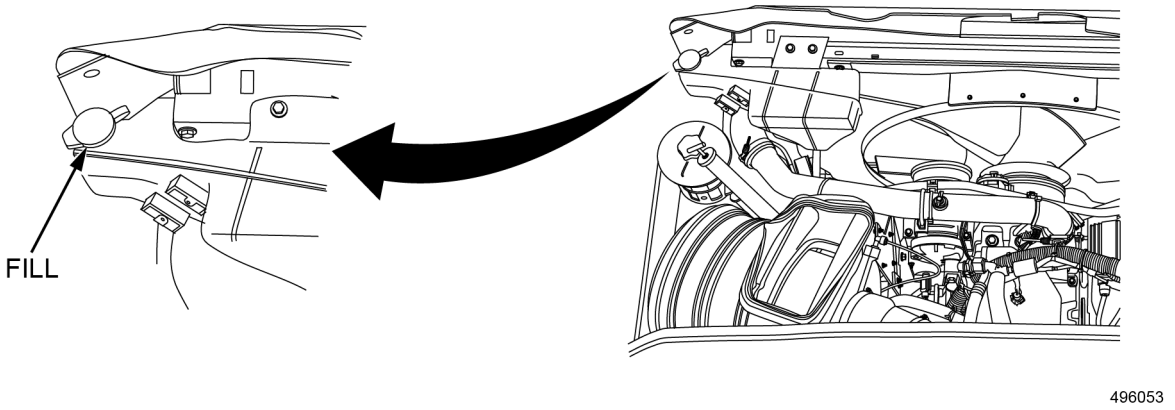


Figure 5. Radiator Overflow Reservoir.

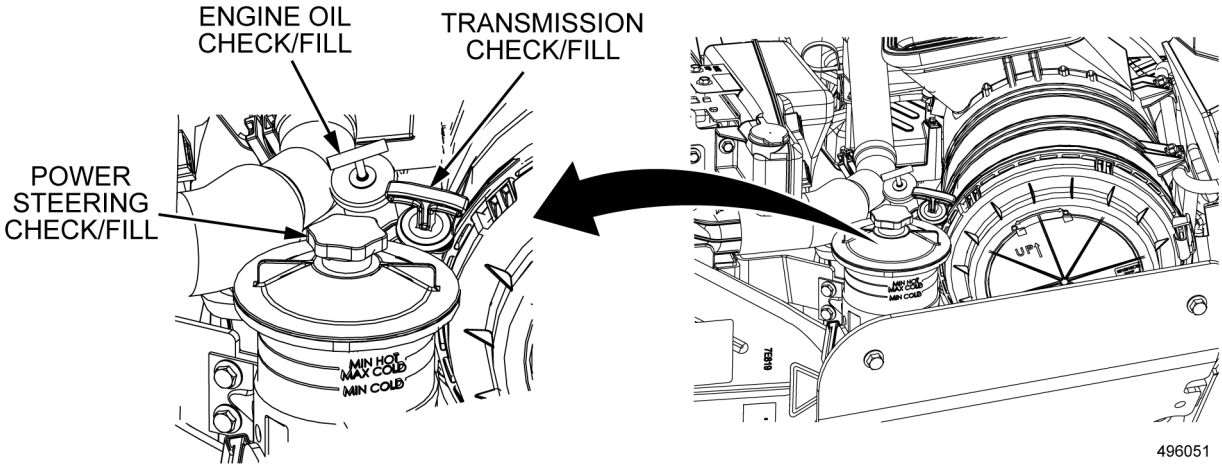


Figure 6. Engine Crankcase, Power Steering Fluid, and Transmission.

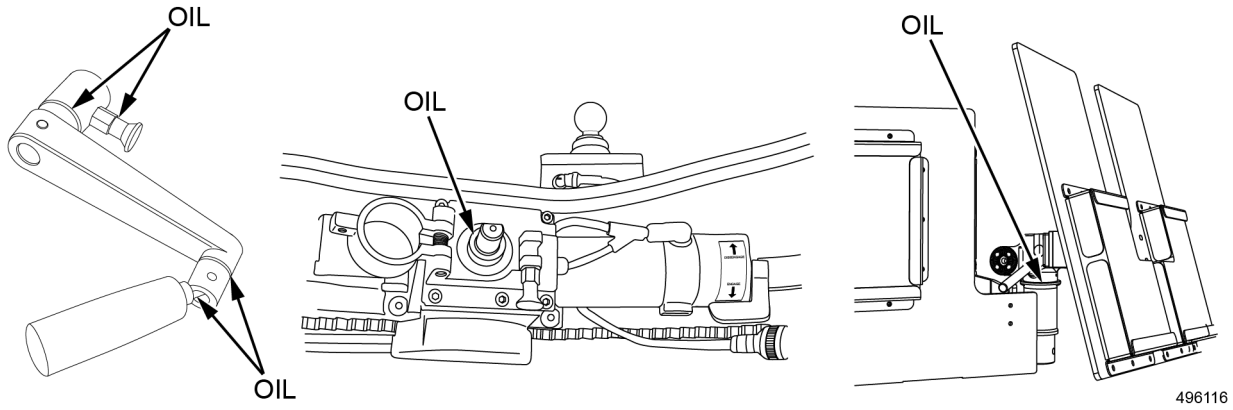


Figure 7. Deflector Pintle and ITDS.

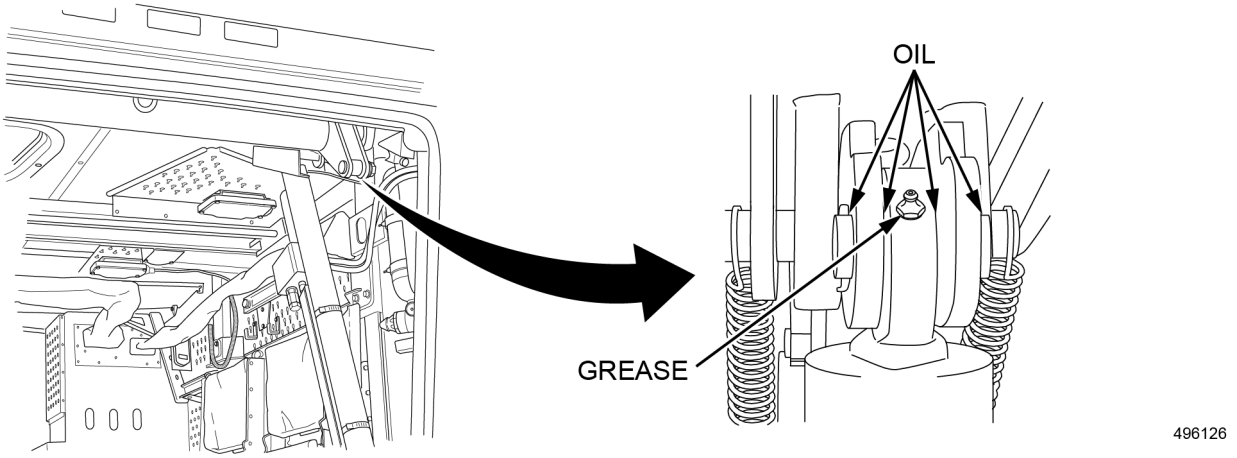


Figure 8. Rear Door Cylinder Upper Pivot.

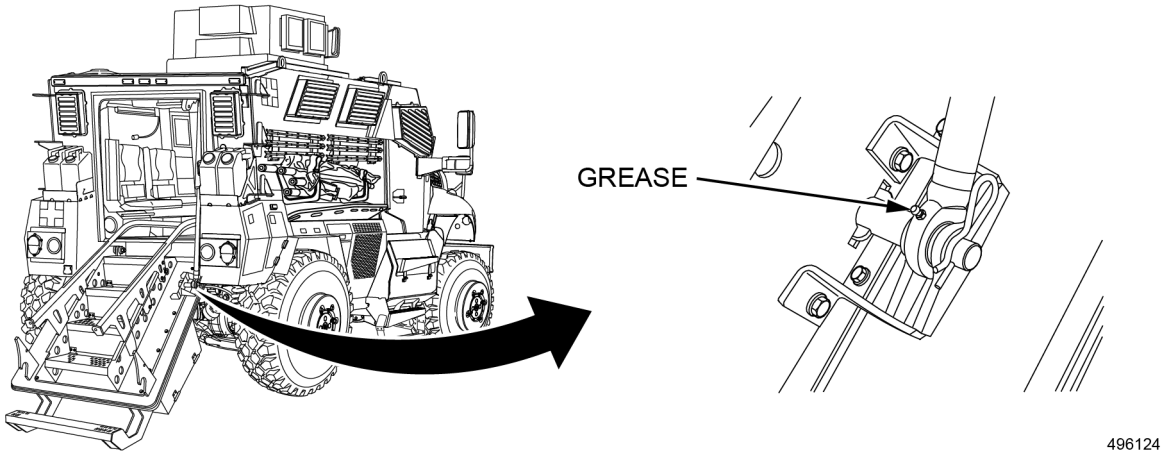


Figure 9. Rear Door Cylinder Lower Pivot.

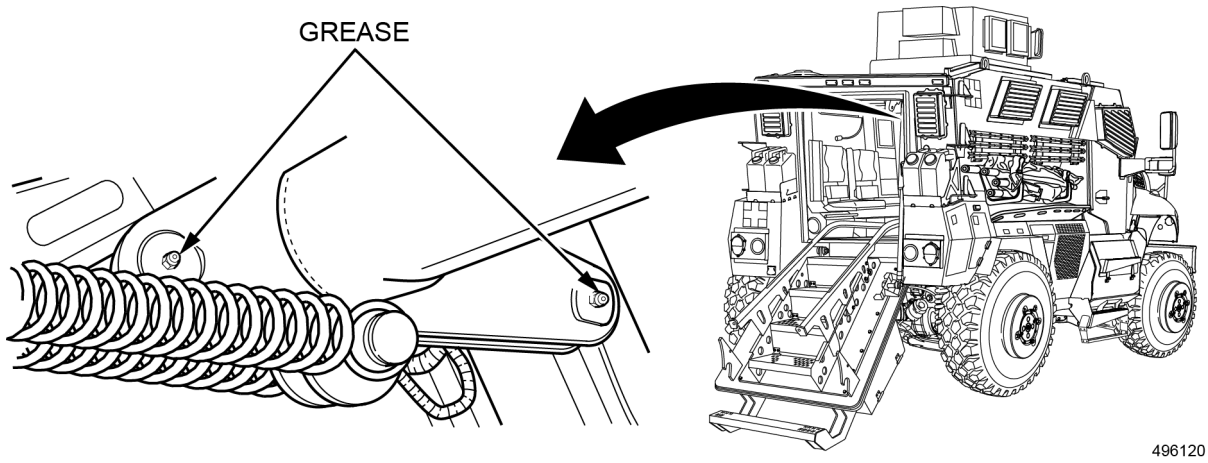


Figure 10. Commander Side Rear Door Lock, Hydraulic Cylinder, and Pin (Cover Removed; Drive Side Similar).

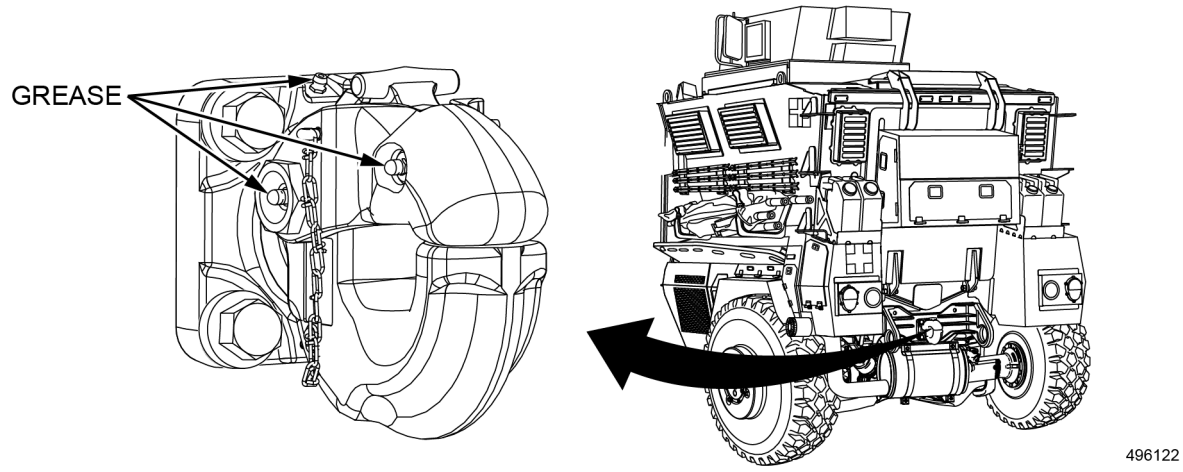


Figure 11. Pintle Hook.

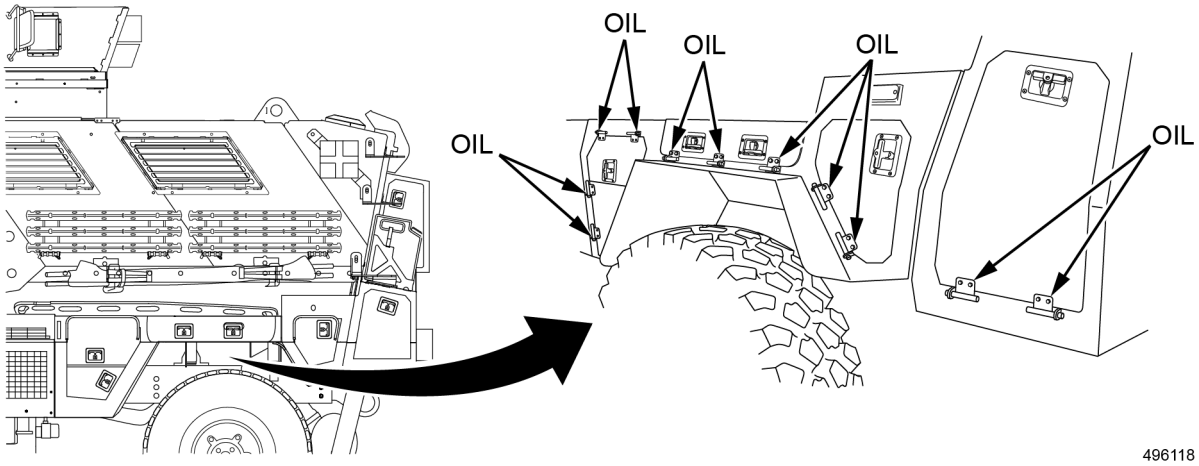


Figure 12. Stowage Box Door Hinges (Commander Side Similar).

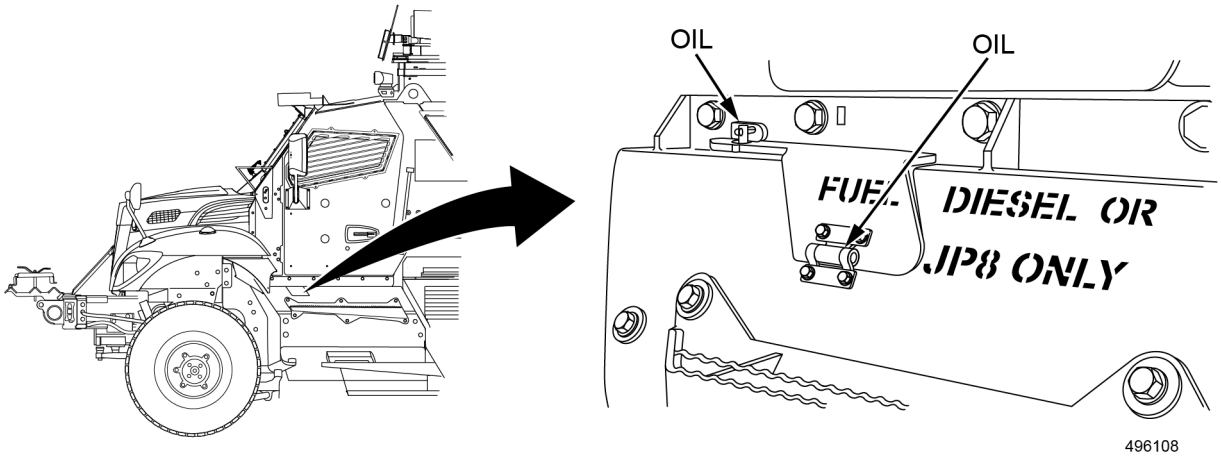


Figure 13. Armor Access Door, Armor Access Door Hinges, and Holddowns (Driver Side).

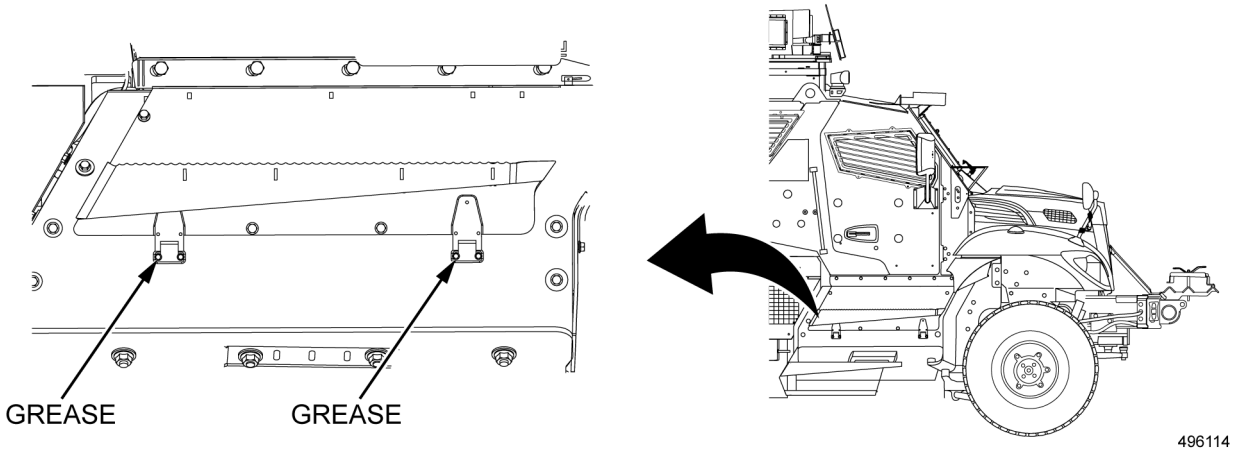


Figure 14. Armor Access Door, Armor Access Door Hinges, and Holddowns (Commander Side).

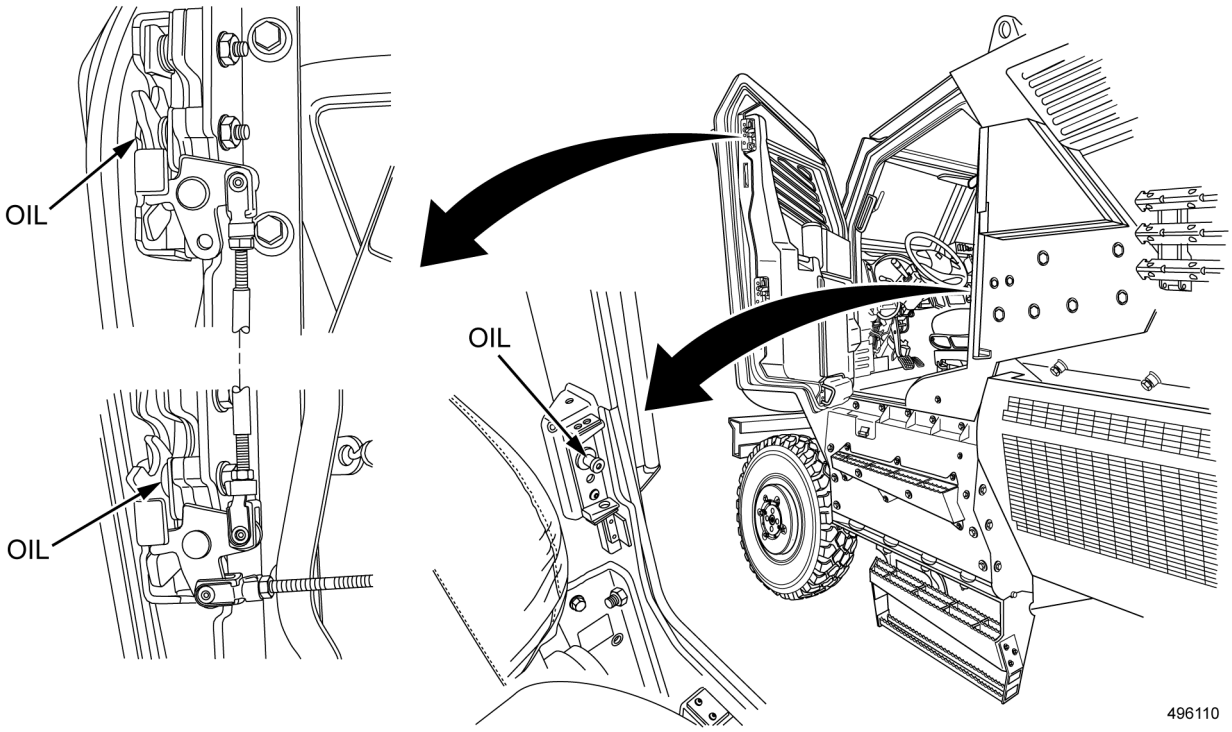


Figure 15. Driver Door Latch (Commander Door Similar).

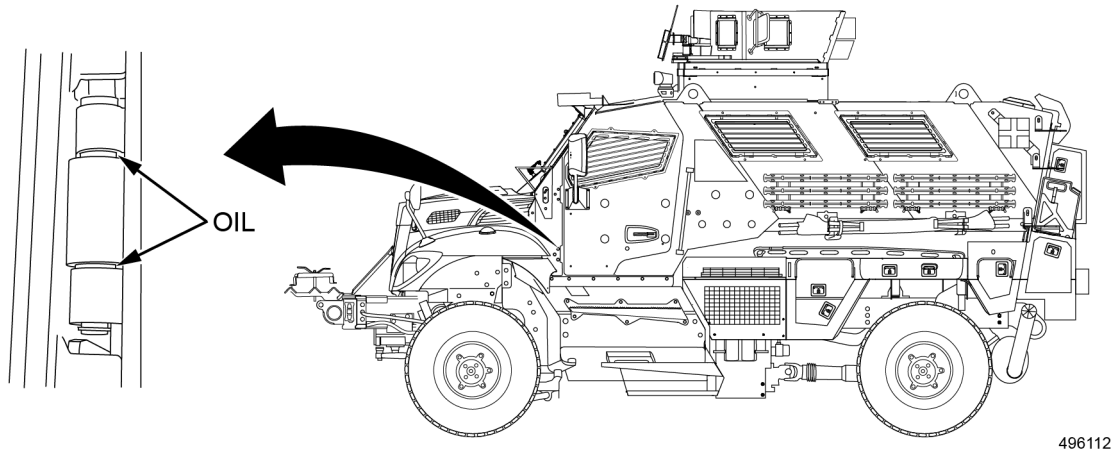


Figure 16. Driver Door Hinge (Commander Door Similar).

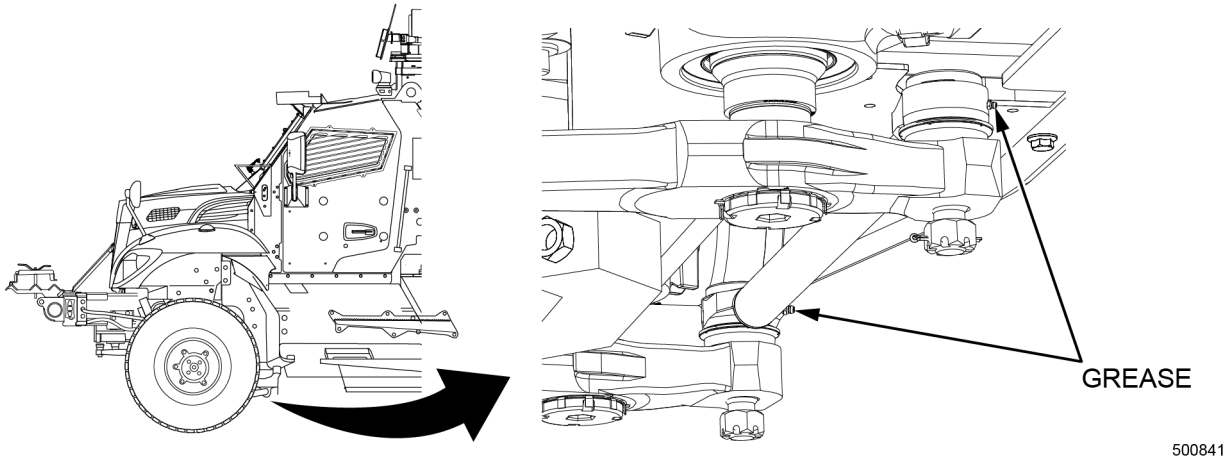


Figure 17. Drag Link.

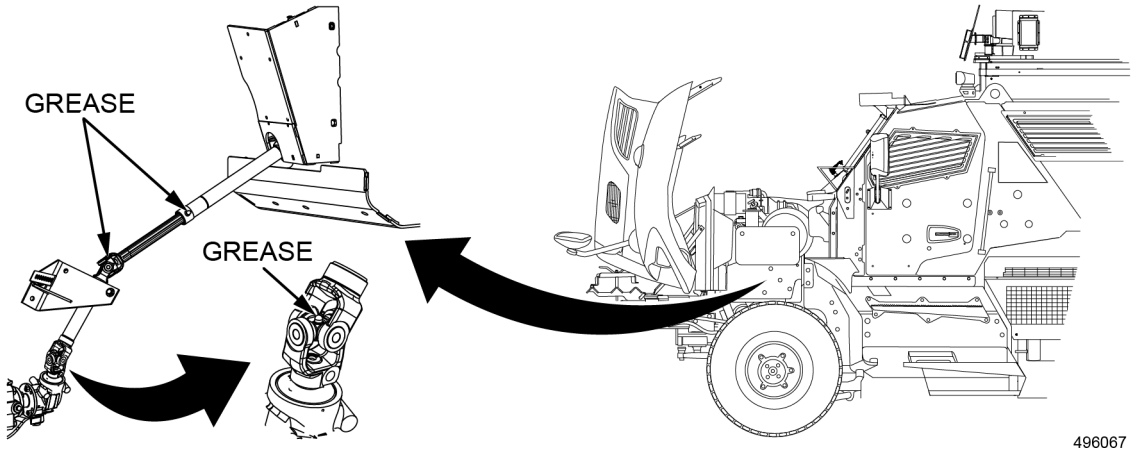


Figure 18. Steering Gear/Shaft U-Joints/Slip Joints.

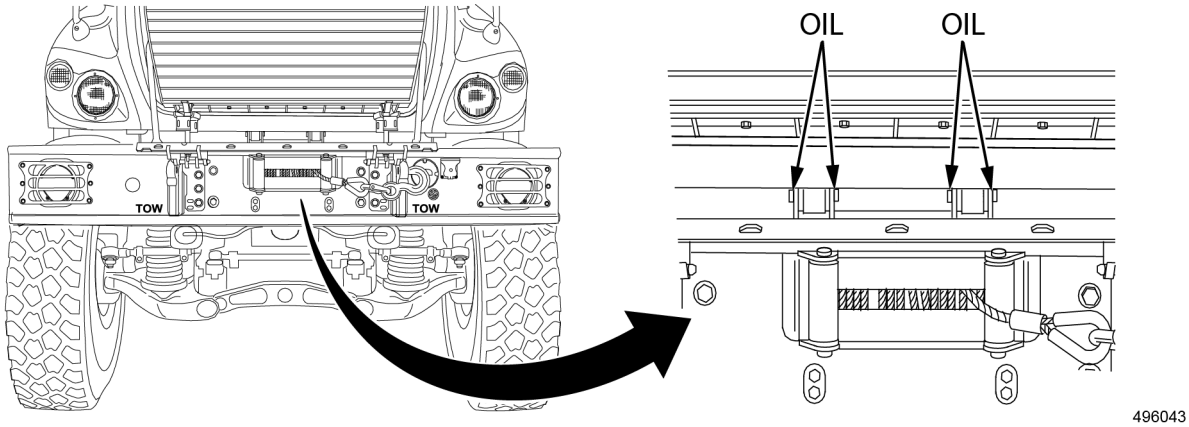


Figure 19. Hood Hinges.

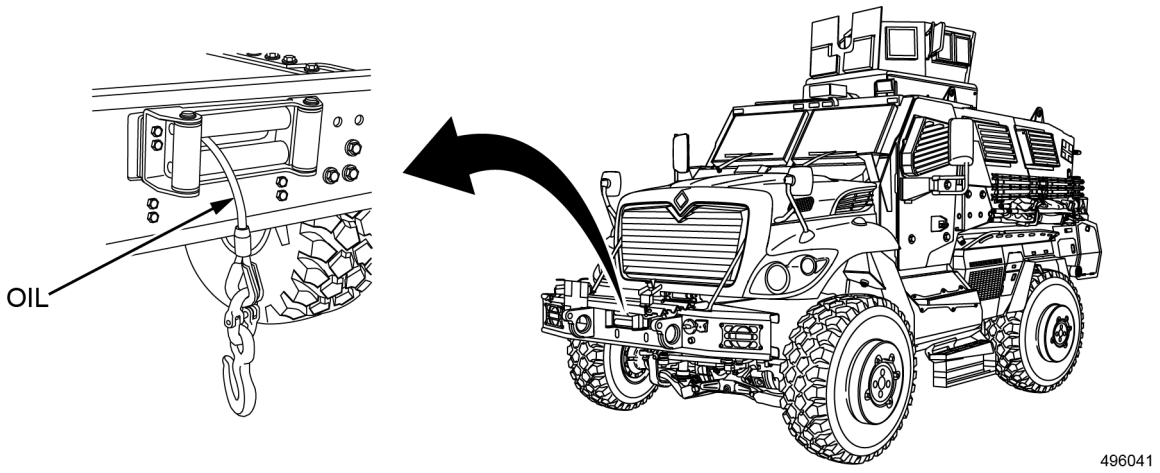


Figure 20. Winch Cable.

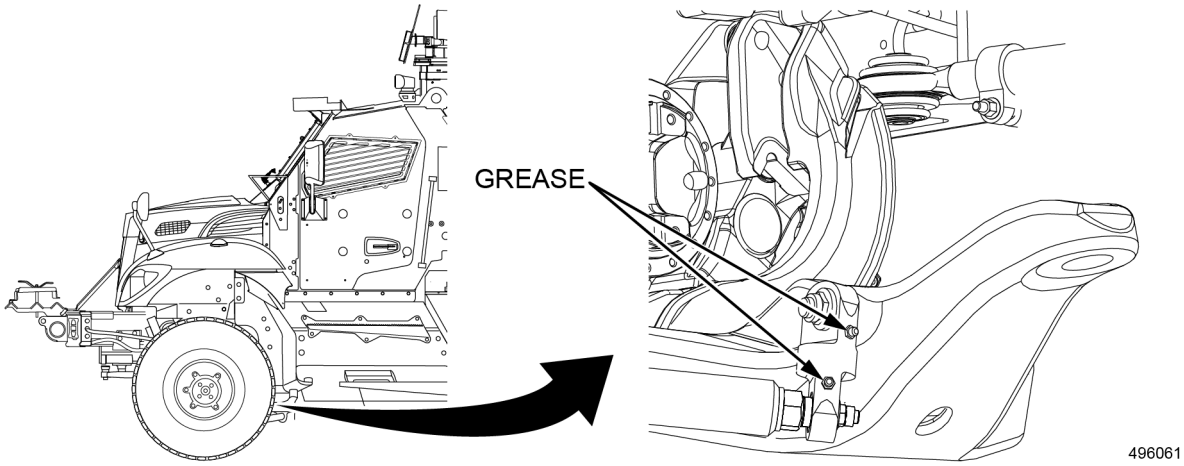


Figure 21. Driver Side End Link (Commander Side Similar).

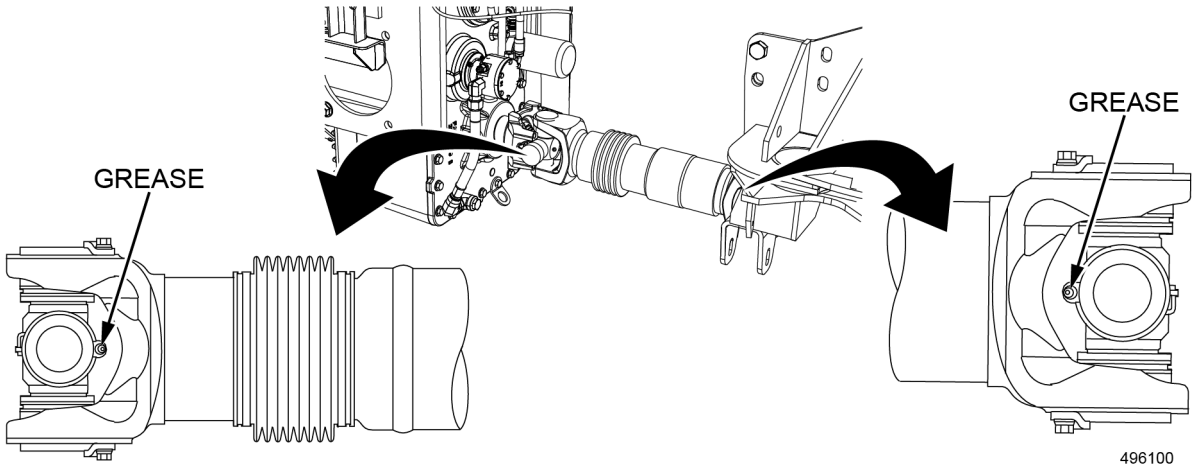


Figure 22. Rear Propeller Shaft.

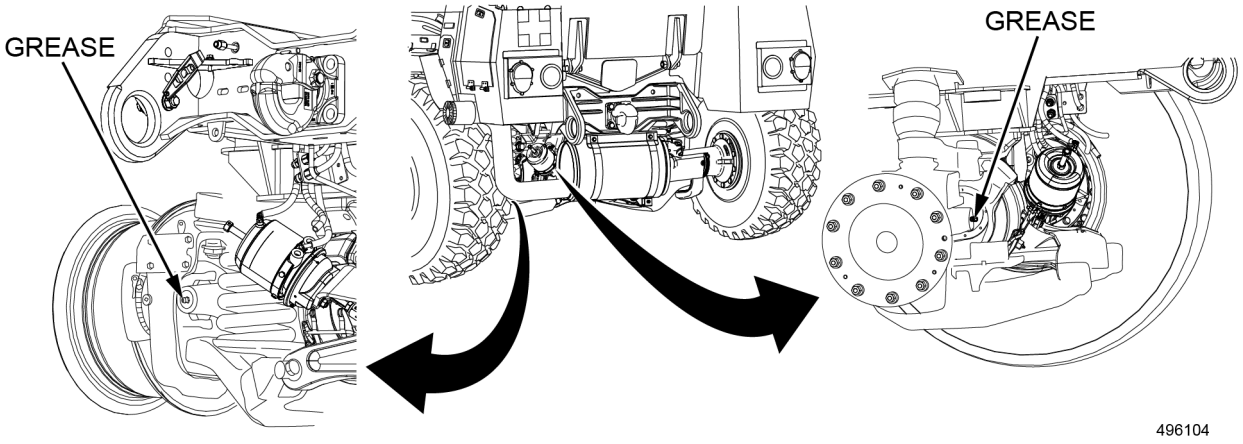


Figure 23. Rear Half Shafts.

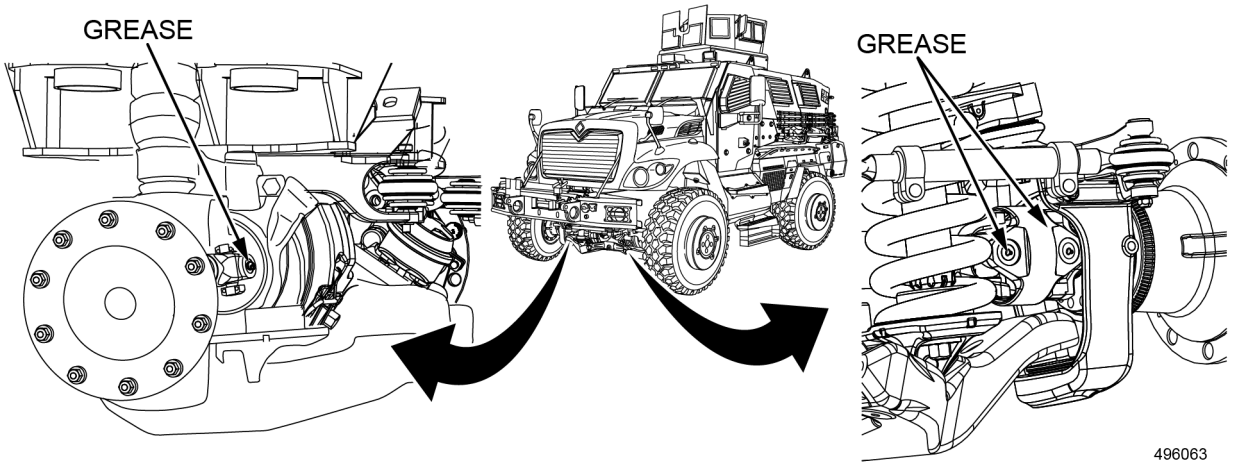


Figure 24. Front Half Shafts.

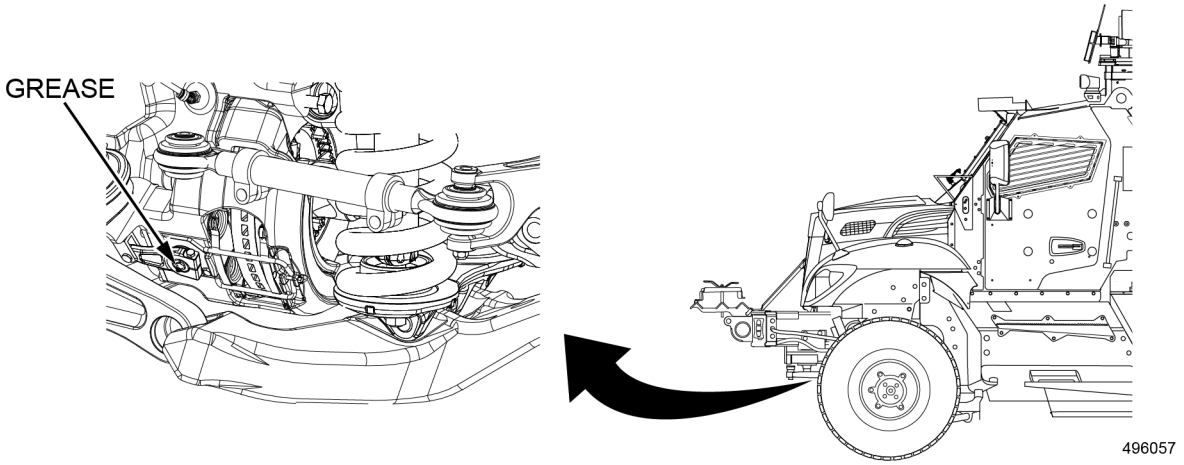


Figure 25. Driver Side Front Brake Caliper (Commander Side and Rear Brake Calipers Similar).

Table 1. Lubrication Schedule.

PART	FRE-QUENCY	CAPACITY	FLUID/ LUBRICANT	TEMPERATURE RANGE	NATIONAL STOCK NUMBERS (NSN)
Engine Crankcase Refer to Figure 6.	Before / After	28 qt (26.5L)	MIL-PRF-2104 OE/HDO-15-40 SAE 15W-40	0ºF to +120ºF (-18ºC to +49ºC)	9150-01-421-1427 (1 qt) 9150-01-421-1424 (5 gal) 9150-01-421-1432 (55 gal)
			MIL-PRF-46167 OEA-30 SAE 0W-30	<-50°F to +120ºF (-46ºC to +49ºC)	9150-00-402-2372 (5 gal) 9150-00-491-7197 (55 gal)
Transmission Refer to Figure 6.	Before / During	34 qt (32.1L) (dry)	MIL-PRF-2104 OE/HDO-10 SAE 10W	-10ºF to +120ºF (-23ºC to +49ºC)	9150-01-496-1957 (1 qt) 9150-00-496-1946 (5 gal) 9150-00-496-1939 (55 gal)
		24 qt (22.7L) (refill)	MIL-PRF-46167 OEA-30 SAE 0W-30	All temperatures	9150-00-402-2372 (5 gal) 9150-00-491-7197 (55 gal)
Power Steering Fluid Refer to Figure 6.	Before / After	5.5 qt (5.2L)	MIL-PRF-2104 OE/HDO-15-40 SAE 15W-40	0ºF to +120ºF (-18ºC to +49ºC)	9150-01-421-1427 (1 qt) 9150-01-421-1424 (5 gal) 9150-01-421-1432 (55 gal)
			MIL-PRF-46167 OEA-30 SAE 0W-30	All temperatures	9150-00-402-2372 (5 gal) 9150-00-491-7197 (55 gal)
Radiator Overflow Reservoir Refer to Figure 5.	Before / After	4.8 qt (4.5L)	CID-A-A-52624A Type 1B (60% Ethylene Glycol)	<-50ºF to +120ºF (<-46ºC to +49ºC)	6850-01-464-9266 (1 gal) 6850-01-464-9263 (5 gal) 6850-01-464-9096 (55 gal)
			CID-A-A-52624A Type 1C (50% Ethylene Glycol)	<-30ºF to +120ºF (<-34ºC to +49ºC)	6850-01-471-6530 (1 gal) 6850-01-471-6534 (5 gal) 6850-01-471-6521 (55 gal)
Windshield Washer Fluid Refer to Figure 4.	Before / After	4.0 qt (3.8L)	A-A-59664	All temperatures	6850-00-926-2275 (16 oz)

PART	FRE-QUENCY	CAPACITY	FLUID/ LUBRICANT	TEMPERATURE RANGE	NATIONAL STOCK NUMBERS (NSN)
Deflector Pintle and ITDS, Manual Hand Crank, Riot Guard Hinges, Rear Door Cylinder Upper Pivot, Stowage Box Door Hinges, Access Armor Door Hinges and Holddowns, Door Latches, Door Hinges, Hood Hinges, and Winch Cable Refer to Figures 7, 8, 12, 13, 14, 15, 16, 19, and 20.	Monthly	As required	MIL-PRF-3150 PL-M	All temperatures	9150-00-231-2361 (1 qt) 9150-00-231-2356 (5 gal) 9150-00-231-2357 (55 gal)
Rear Door Cylinder Upper Pivot, Rear Door Cylinder Lower Pivot, Access Armor Door Hinges, Rear Door Lock, Pintle Hook, Drag Links, Steering Gear/Shaft U-Joints/ Slipjoints, End Links, Rear Propeller Shaft, Rear Half Shafts, Front Half Shafts, and Brake Calipers Refer to Figures 9, 10, 11, 13, 14, 17, 18, 21, 22, 23, 24, and 25.	Monthly	As required	MIL-PRF-10924 GAA	All temperatures	9150-01-197-7693 (14 oz) 9150-01-197-7690 (1.75 lb) 9150-01-197-7689 (6.5 lb) 9150-01-197-7692 (35 lb) 9150-01-197-7691 (120 lb) 9150-01-501-7745 (370 lb)

END OF WORK PACKAGE

CHAPTER 5

SUPPORTING INFORMATION

FOR

MINE RESISTANT AMBUSH PROTECTED (MRAP) VEHICLE

CREW MAINTENANCE

REFERENCES

SCOPE

This work package lists all field manuals, forms, technical manuals, and miscellaneous publications referenced in this manual.

FIELD MANUALS

FM 4-02.2	Medical Evacuation
FM 4-25.11	First Aid
FM 21-60	Visual Signals

FORMS

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2404	Equipment Inspection and Maintenance Worksheet
SF 368	Product Quality Deficiency Report

TECHNICAL BULLETINS

TB-43-0213	Corrosion Prevention and Control (CPC) for Tactical Vehicles
TB-MED 507	Heat Stress Control and Heat Casualty Management
TB-MED 508	Prevention and Management of Cold-Weather Injuries

TECHNICAL MANUALS

TM 750-244-6	Procedures For Destruction Of Tank Automotive Equipment To Prevent Enemy Use (U.S. ARMY TANK AUTOMOTIVE AND ARMAMENTS COMMAND)

MISCELLANEOUS PUBLICATIONS

AR 385-10	The Army Safety Program
AR 700-138	Army Logistics Readiness and Sustainability
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-909	Field and Garrison Furnishings and Equipment
CTA 50-970	Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual

END OF WORK PACKAGE

CREW MAINTENANCE

COMPONENTS OF END ITEMS (COEI)/BASIC ISSUE ITEMS (BII) LISTS

INTRODUCTION

SCOPE

This work package lists COEI and BII for Mine Resistant Ambush Protected (MRAP) M1266A1 to help you inventory items for safe and efficient operation of the equipment.

GENERAL

The COEI and BII information is divided into the following lists:

Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the vehicle. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Basic Issue Items (BII). These essential items are required to place the vehicle in operation, operate them, and to do emergency repairs. Although shipped separately packaged, BII must be with the vehicle during operation and when transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the Table of Organization and Equipment/Modified Table of Organization and Equipment (TOE/MTOE). Illustrations are furnished to help you find and identify the items.

EXPLANATION OF COLUMNS IN THE COEI LIST AND BII LIST

Column (1) Item Number. Gives you the reference number of the item listed.

Column (2) National Stock Number (NSN) and Illustration. Identifies the stock number of the item to be used for requisitioning purposes and provides an illustration of the item.

Column (3) Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this column. The last line below the description is the part number and CAGEC (Commercial and Government Entity Code in parentheses).

Column (4) Usable On Code. When applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (5) U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) QTY RQR. Indicates the quantity required.

Table 1. Components of End Item List

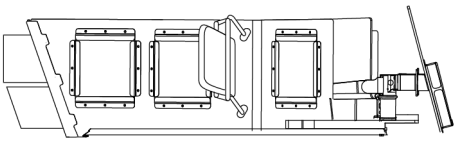
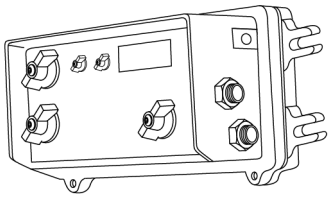
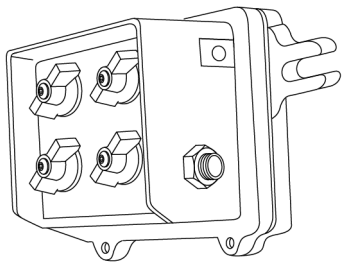
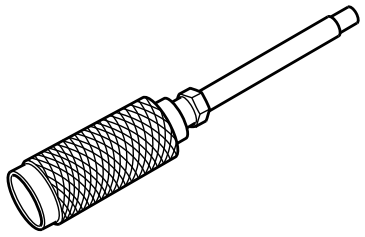
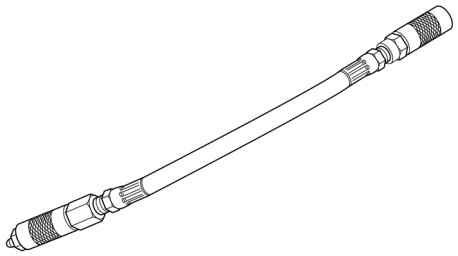
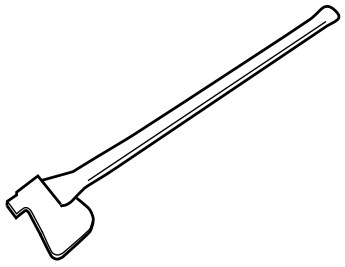
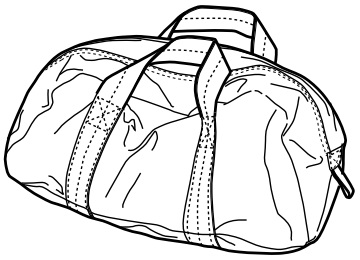
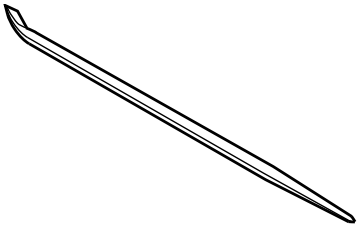
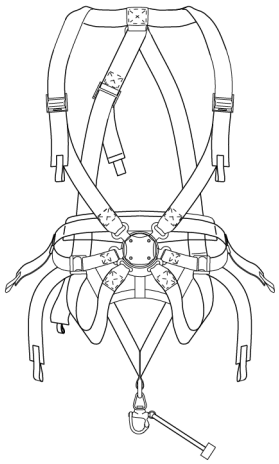
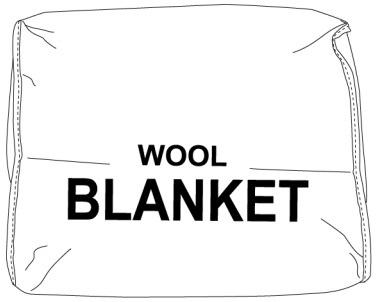
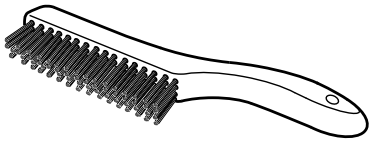
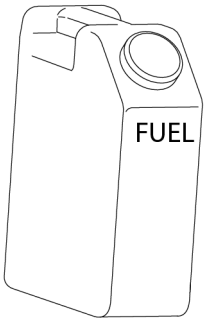
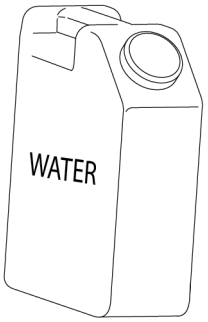
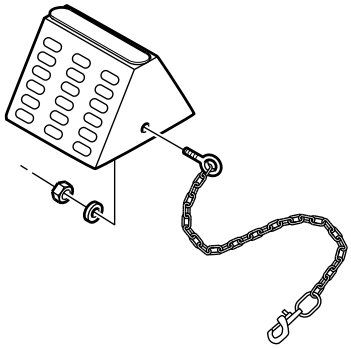
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	2540-01-543-8325  526141	ARMOR SET, SUPPLEMENT, SMALL ARM (OGPK): 13018180		EA	1
2	5830-01-395-4177  510601	INTERCOMMUNICATION SET: A3206104		EA	1
3	5830-01-458-4049  510561	INTERCOMMUNICATION SET: A3206104		EA	1

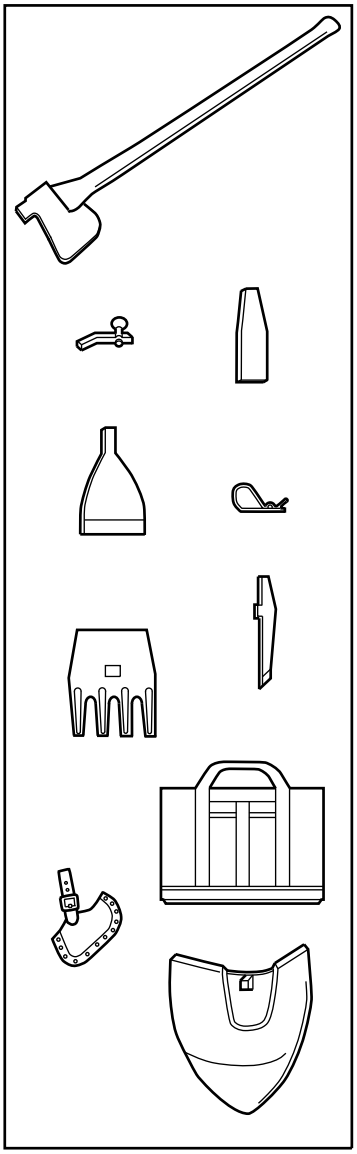
Table 2. Basic Issue Items List

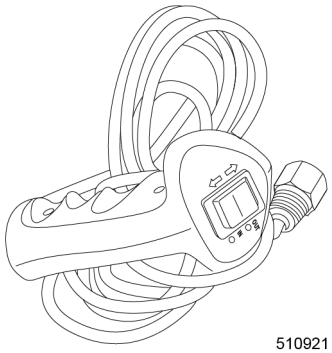
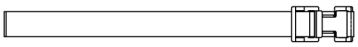
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
1	4930-00-204-2550  B100000299	ADAPTER, GREASE GUN COUPLING: grease gun adapter 5855		EA	1
2	4930-00-288-1511  526162	ADAPTER, GREASE GUN COUPLING: adapter, extension, hydraulic gun tube, flex 12” 1G G6		EA	1
3	5110-01-416-7827  B100000684	AX, SINGLE BIT: max combination tool accessory 595-010		EA	1

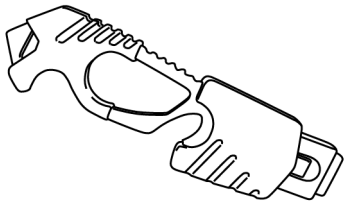
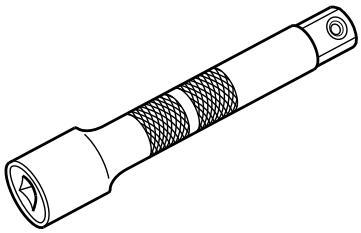
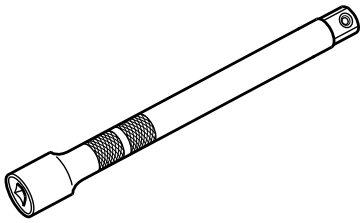
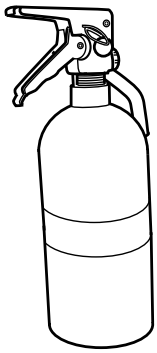
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
4	5140-00-473-6256  B102600334	BAG, TOOL: tool bag 5140-00-473-6256		EA	1
5	5120-00-224-1372  B102600335	BAR, PINCH: pry bar, 26 in. B107.410		EA	1
6	2540-01-597-6306  526101	BELT, VEHICULAR SAFETY: IMPROVED GUNNER RESTRAINT SYSTEM (IGRS) HARNESS 92-US-07301		EA	1

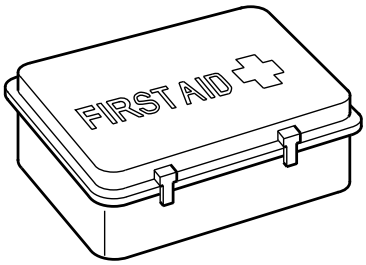
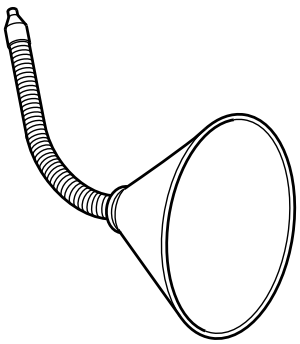
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
7	4210-01-324-2734  526061	BLANKET, FIRE: BTOCO		EA	1
8	5120-01-416-8572 B100000687	BROAD PICK ATTACHMENT: max combination tool accessory 595-070		EA	1
9	7920-00-269-1259  B102600331	BRUSH, WIRE, SCRATCH: 20010		EA	1

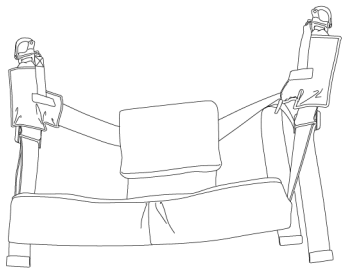
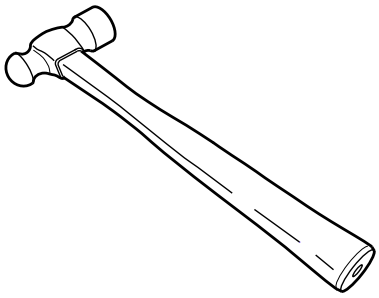
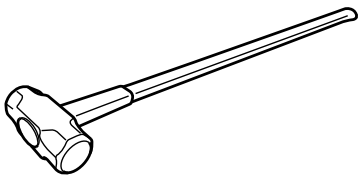
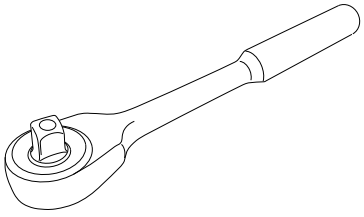
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
10	7240-01-337-5268  510821	CAN, MILITARY: can, fuel military, tan 3819247		EA	2
11	7240-00-089-3827  510861	CAN, MILITARY: can, water, military plastic, 5-gallon capacity 3819249		EA	2
12	2540-01-500-6119  B102600313	CHOCK, WHEEL-TRACK: wheel chocks A-A-52475		EA	2

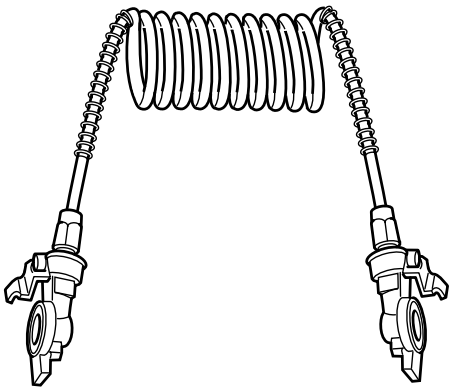
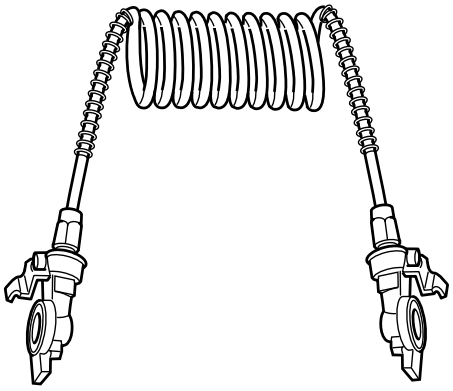
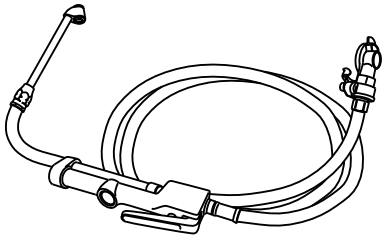
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
13	5120-01-416-8568  B100000677	COMBINATION TOOL, HAND: max combination tool kit 5120-01-416-8568		SE	1

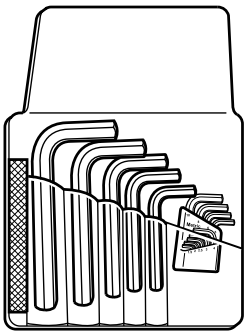
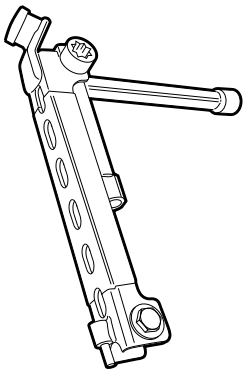
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
14	6110 01-568-6312  510921	CONTROLLER, WINCH: winch, remote control 77671		EA	1
15	5120-00-224-1390 B102600338	CROWBAR: pinch point, 59-62 in. 5120-00-224-1390		EA	1
16	2540-01-600-6845  510741	CUSHION, SEAT, VEHICULAR: strap,webbing 3896929C1		EA	30

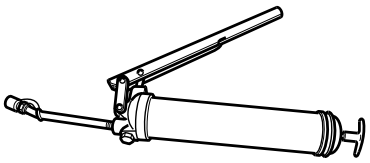
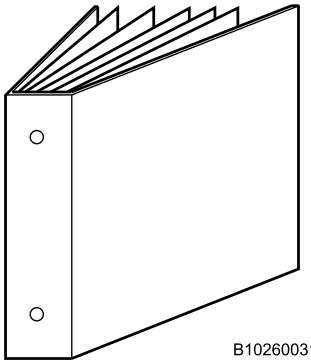
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
17	2590-01-576-2424  510661	CUTTER CABLE, VEHICLE MOUNTED: cutter-safety 22-01943		EA	6
18	5120-01-335-1050  B100000579	EXTENSION, SOCKET WRENCH: 5 in. long, 1/2-inch drive SXK5		EA	1
19	5120-00-227-8074  B100000580	EXTENSION, SOCKET WRENCH: 10 in. long, 1/2 in. drive 11655788-1		EA	1
20	4210-01-577-3170  B102600314	EXTINGUISHER, FIRE: 5-lb, pk 10 bc 15917–01		EA	2

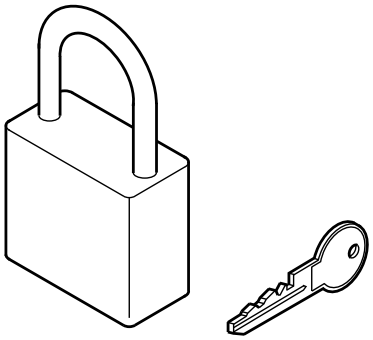
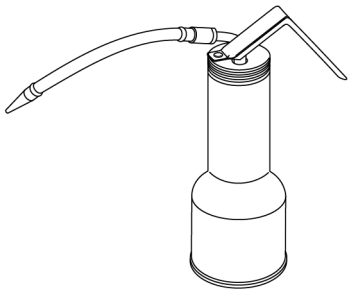
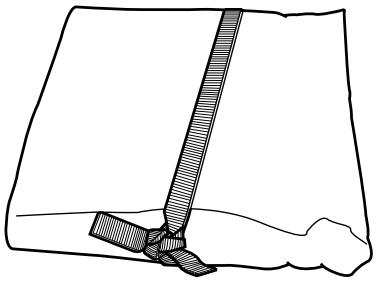
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
21	5120–01–416–8574 B100000690	FASTENER, RAKE-HOE ATTACHMENT, COMBINATION: max combination tool accessory 595-090		EA	1
22	6545-00-922-1200  B102600318	FIRST AID KIT, GENERAL PURPOSE: 6545-00-922-1200		EA	1
23	7240-00-559-7364  B102600333	FUNNEL: steel, flex mount 495		BX	1

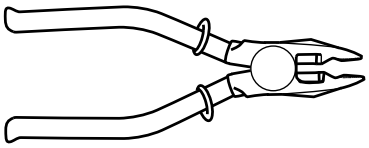
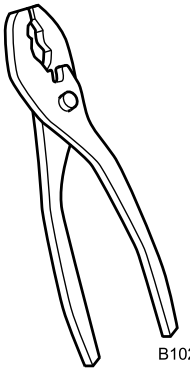
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
24	2590-01-601-0818  510701	GUNNER SLING SEAT: blast energy attenuating turret seat (BEATS) kit 401-US-00301F8		EA	1
25	5120-00-061-8546  B102600332	HAMMER, HAND: machinist's ball peen, 2-lb 11677028-3		EA	1
26	5120-00-243-2957  B100000310	HAMMER, HAND: hammer, sledge,10-lb head 01116		EA	1
27	5120-00-230-6385  317781	HANDLE SOCKET WRENCH: 9 in. long, 1/2 in. drive AS4283		EA	1

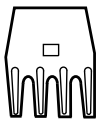
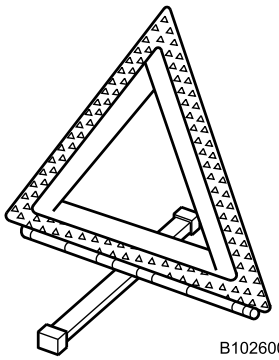
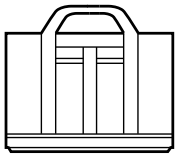
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
28	4720-01-391-8290  B101500562	HOSE, ASSEMBLY, NONMETALLIC: gladhand quick disconnect blue 12419936-001		EA	1
29	4720-01-391-8291  B101500562	HOSE ASSEMBLY, NONMETALLIC: gladhand quick disconnect red 12419936-002		EA	1
30	4910-01-038-2820  B100000404	INFLATOR-GAGE, PNEUMATIC TIRE: with hose 11677140-5		EA	1

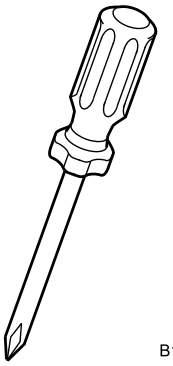
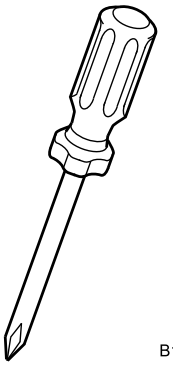
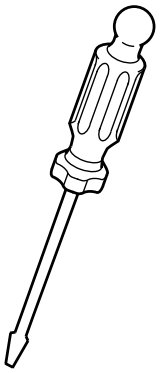
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
31	5120-01-335-1508  B100000300	KEY SET, SOCKET HEAD SCREW: standard AWM140DK		EA	1
32	5120-01-416-8575 B100000693	LOCK PIN SET, COMBINATION TOOL: max combination tool accessory 595-999		SE	12
33	4240-01-574-0491  228103	LOCK REMOVAL DEVICE: 14000300		EA	1

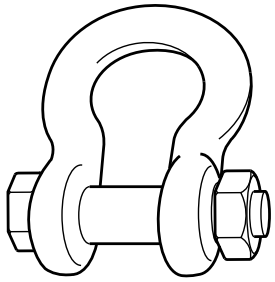
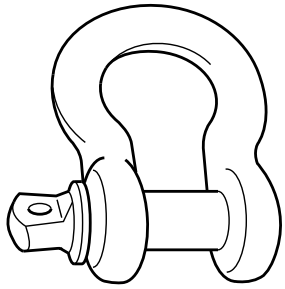
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
34	4930-00-253-2478  B100000298	LUBRICATING GUN, HAND: 1142		EA	1
35	5120-01-416-8571 B100000689	MATTOCK ATTACHMENT, COMBINATION TOOL: max combination tool accessory 595-050		EA	1
36	 B102600312	OPERATOR MANUAL, M1266A1: TM 9-2355-444-10		EA	1

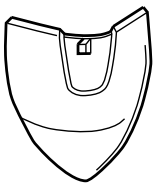
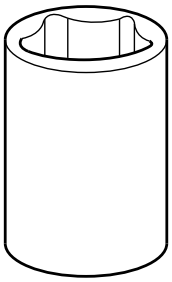
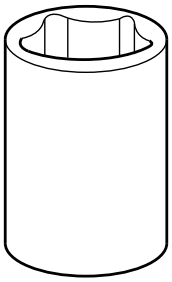
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
37	5340-01-408-8452  B102600328	PADLOCK SET: AA59486-2AS10S0E2		BX	4
38	5120-01-604-5519  492840	OILER, HAND HELD: FRS 50-573 FRS 50-573		EA	1
39	8345-00-174-6865  B100000302	PANEL MARKER: signal, ground to air, red/yellow 8340-00-174-6865		EA	2

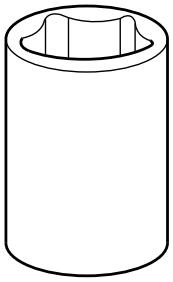
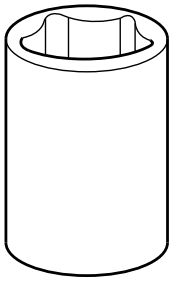
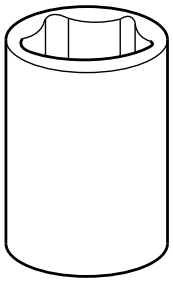
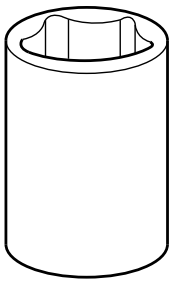
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
40	5120-01-416-8573 B100000691	PICK ATTACHMENT, COMBINATION TOOL: max combination tool accessory 595-060		EA	1
41	5120-00-239-8251  B100000405	PLIERS: standard lineman, 8 in. long 19508CV		EA	1
42	5120-00-223-7397  B102600319	PLIERS, SLIP JOINT: combination, 8 in. long 5214421		EA	1

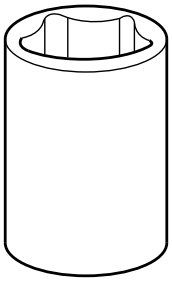
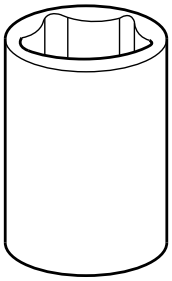
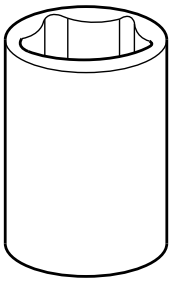
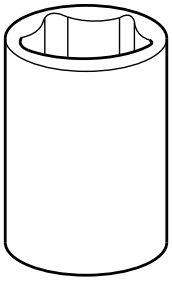
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
43	5120-01-416-8577  B100000692	RAKE-HOE ATTACHMENT, COMBINATION TOOL: max combination tool accessory 595-080		EA	1
44	9905-00-148-9546  B102600323	REFLECTOR SET, HIGHWAY WARNING, TRIANGULAR: 11669000		EA	1
45	5140-01-416-8569  B100000685	ROLL, TOOLS AND ACCESSORIES: max combination tool bag 595-030		EA	1

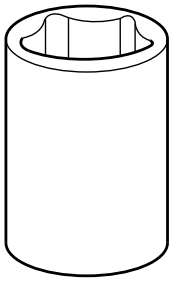
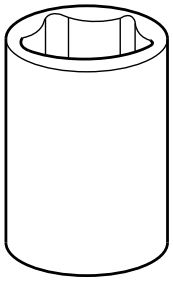
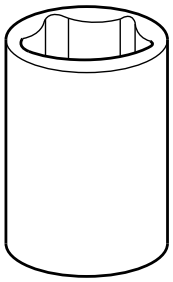
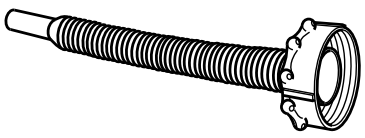
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
46	5120-00-234-8913  B102600325	SCREWDRIVER, CROSS TIP: #2, 4 in. long, emergency ingress tool 11655777-12		EA	1
47	5120-00-234-8912  B102600326	SCREWDRIVER, CROSS TIP: #3, 6 in. long 11655777-9		EA	1
48	5120-00-278-1283  B102600320	SCREWDRIVER, FLAT TIP: #2, 6 in. long 11655777-11		EA	1

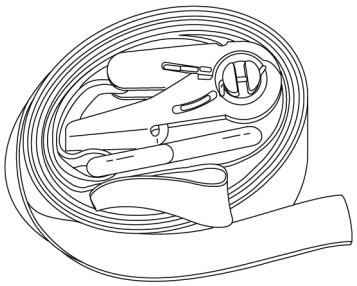
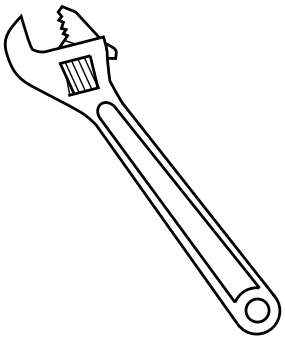
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
49	4030-01-187-0964  B100000581	SHACKLE: safety anchor 12328579		EA	4
50	4030-01-586-5913  B100000582	SHACKLE: 12-ton 3687434C1		EA	1
51	5110-01-416-7830 B100000686	SHEATH, AX HEAD: max combination tool accessory 595-020		EA	1

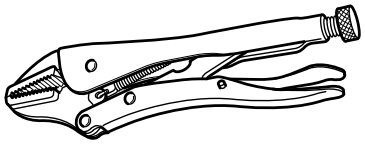
(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
52	5120-01-416-8570  B100000688	SHOVEL ATTACHMENT, COMBINATION TOOL: max combination tool accessory 595-040		EA	1
53	5120-00-237-0984  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 7/16 in., 12 pt V162R		EA	1
54	5120-01-398-7937  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 1/2 in., 6 pt 3819314		EA	1

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
55	5120-00-189-7932  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 9/16 in., 12 pt 1U7102		EA	1
56	5120-00-189-7946  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 5/8 in., 12 pt 11677025-2		EA	1
57	5120-00-189-7985  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 3/4 in., 12 pt 11677025-4		EA	1
58	5120-00-189-7934  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 7/8 in., 12 pt 3819318		EA	1

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
59	5130-00-714-0600  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 15/16 in., 6 pt J7330H		EA	1
60	5120-01-349-1042  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 10 mm, 6 pt TWM10A		EA	1
61	5120-01-398-8033  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 13 mm, 6 pt 00944255000		EA	1
62	5120-01-348-9033  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 14 mm, 6 pt TWM14A		EA	1

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
63	5120-01-348-9035  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 16 mm, 6 pt TWM16		EA	1
64	5120-01-348-9037  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 18 mm, 6 pt TWM18		EA	1
65	5120-01-398-7919  B100000578	SOCKET, SOCKET WRENCH: 1/2 in. drive, 19 mm, 6 pt 3819326		EA	1
66	7240-00-177-6154  B100000301	SPOUT, CAN, FLEXIBLE: w/filter screen, 16 in. long 11677020		EA	1

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
67	3990-01-603-9081  510521	TIE DOWN, CARGO, VEHICLE: strap, 1 inch ratchet 3901907C1		EA	12
68	5120-00-240-5328  B102600321	WRENCH, ADJUSTABLE: 8 in. long 11655778-3		EA	1

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER (NSN) AND ILLUSTRATION	(3) DESCRIPTION, PART NUMBER/(CAGEC)	(4) USABLE ON CODE	(5) U/I	(6) QTY RQR
69	5120-00-264-3796 B102600324	WRENCH, ADJUSTABLE: 12 in. long 11655778-5		EA	1
70	5120-00-494-1911  B100000309	WRENCH, PLIER: locking vise grip, 10 in. long 0502L3		EA	1

END OF WORK PACKAGE

CREW MAINTENANCE

ADDITIONAL AUTHORIZATION LIST (AAL)

SCOPE

This work package lists additional items you are authorized for the support of the Mine Resistant Ambush Protected (MRAP) M1266A1.

GENERAL

This list identifies items that do not have to accompany the vehicle and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

Explanation Of Columns In The AAL

Column (1) National Stock Number (NSN), identifies the stock number of the item to be used for requisitioning purposes.

Column (2) Description, Part Number (P/N), and Commercial and Government Entity Code (CAGEC), identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (in parentheses) and the part number.

Column (3) Usable On Code, when applicable, gives you a code if the item you need is not the same for different models of equipment.

Column (4) Unit of Issue (U/I), indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) QTY RECM. Indicates the quantity recommended.

Table 1. Additional Authorization List.

(1) NATIONAL STOCK NUMBER (NSN)	(2) DESCRIPTION, PART NUMBER/(CAGEC)	(3) USABLE ON CODE	(4) U/I	(5) QTY RECM
2540–01–588–6125	ARMOR SET, SUPPLEMENTAL, SMALL ARMS-FRAGME: 3726835C94 (338X5)		kt	1
2540-01-586-6408	ARMOR, SUPPLEMENTAL, SMALL ARMS-FR : picatinny overhead protective cover 13021081 (19207)		ea	1
6150-01-222-7943	CABLE ASSEMBLY, POWER, ELECTRICAL: 11682336-4 (19207)		ea	1
2540-01-597-3332	CHAIN ASSEMBLY, TIRE: 0800617 (46156)		ea	4
2540-00-863-3153	COUPLER, DRAWBAR, RING: 10894255 (19207)		ea	2
5342-01-605-9803	FAIRLEAD, BLOCK: kit, assy rear roof roxtec 3925150C91 (338X5)		kt	1
5340-01-606-2163	HARDWARE KIT, MECHANIC EQUIPMENT: kit, sparks rhino assy 3889613C92 (338X5)		ea	1
3940-01-270-3389	SLING, MULTIPLE LEG: SAFETY CHAINS, TOWING: 1482010 (45152)		ea	2
4910-01-267-2912	TOWBAR, MOTOR VEHICLE: 12322663 (19207)		ea	1
4010-01-556-5581	WIRE ROPE ASSEMBLY, SINGLE LEG: ELECTRICAL CABLE, TOWING: ABCH0587 (3P0G5)		ea	1

END OF WORK PACKAGE

CREW MAINTENANCE

EXPENDABLE AND DURABLE ITEMS LIST

SCOPE

This work package lists expendable and durable items that you will need to operate and maintain the Mine Resistant Ambush Protected (MRAP) M1266A1. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items), CTA 50-909, Field and Garrison Furnishings and Equipment or CTA 8-100, Army Medical Department Expendable/Durable Items.

EXPLANATIONS OF COLUMNS IN THE EXPENDABLE/DURABLE ITEMS LIST

Column (1) Item No. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use brake fluid (WP 0098, item 5)).

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item (C = Crew).

Column (3) National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) Item Name, Description, Part Number/(CAGEC). This column provides the other information you need to identify the item. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC) (in parentheses).

Column (5) U/I. Unit of Issue (U/I) code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable and Durable Items List.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER AND (CAGEC)	(5) U/I
1	C	6850-01-464-9266	Antifreeze: ethylene glycol, type 1B A-A-52624 (58536)	GL
2	C	6850-01-471-6530	Antifreeze: ethylene glycol, type 1C A-A-52624 (58536)	GL
3	C	8105-01-517-3662	Bag, Biohazard Disposal: infectious waste collection isolation bag 8105–00–NIB-1122 (83421)	BX
4	C	8105-00-837-7754	Bag, Plastic: 6 in. x 6 in., 2-mm thick, interlocking seal 8105-00-837-7754 (83421)	MX
5	C	7920-01-088-4161	Brush: bristle 1127–0002 (17794)	PG
6	C	6850-00-926-2275	Cleaning Compound: windshield, washer solvent concentrate 16 oz, 12 ea 0854-000 (0FTT5)	BX
7	C	7920-00-044-9281	Cloth, Cleaning: white 3479 (0MBA9)	BX
8	C	8520-01-522-0829	Detergent: antibacterial 3143–0061 (1B006)	BX
9	C	7930-00-282-9699	Detergent: general purpose 7930–00–282–9699 (83421)	BX

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER AND (CAGEC)	(5) U/I
10	C	8415-00-268-8350	Gloves: leather A-A-50016 (58536)	PR
11	C	8415-01-283-3866	Gloves: nitrile, large C-4542 (53547)	PR
12	C	6515–01–500–7223	Gloves: patient exam PH8877 (3F049)	PG
13	C	4240-00-052-3776	Goggles: industrial ANSI Z87.1 (80204)	PR
14	C	6532-01-153-6517	Gown, Isolation: disposable, yellow 69979 (6M009)	PG
15	C	9150-01-197-7690	Grease: automotive and artillery, 1.75 lb MIL-PRF-10924 (81349)	CN
16	C	9150-01-421-1427	Lubricating Oil: engine, SAE 15W-40, 0ºF to +120ºF (-18ºC to +49ºC) MIL-PRF-2104 (81349)	QT
17	C	9150-00-402-2372	Lubricating Oil: engine, SAE 0W-30, -50ºF to +90ºF (all temperatures) MIL-PRF-46167 (81349)	CN
18	C	9150-01-496-1957	Lubricating Oil: engine, SAE 10W, -10ºF to +120ºF (-23ºC to +49ºC) MIL-PRF-2104 (81349)	QT
19	C	7690-00-422-9673	Marker: identification, wire tag PWM-1-45 (85480)	PG
20	C	6515-01-003-3142	Mask: surgical 37-510-1 (0GTK2)	PG
21	C	7240-00-138-7985	Measure: liquid 3126-00 (3T537)	EA
22	C	7290-01-150-0716	Pail, Utility: 3 gal. stainless steel 77APX (0REY5)	EA
23	C	5120-01-604-5654	Pan, Drain: automotive fluid FRS 75–762 (55719)	EA
24	C	6515-00-137-6345	Plug, Ear: noise protection 6515001376345 (1JRG9)	BX
25	C	7920-00-205-1711	Rag: wiping 7920-00-205-1711 (80244)	BE
26	C	6810-01-527-5777	Sodium Hypochrolite Solution: (bleach) 02450 (4T284)	QT
27	C	5340-01-556-6045	Strap Line Supporting: strap T120S0HSF4 (53421)	EA

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, PART NUMBER AND (CAGEC)	(5) U/I
28	C	7510-01-310-0496	Tape: pressure sensitive adhesive LMC-1500 (85480)	PG
29	C	6840-01-500-9521	Wipes: disinfectant, germicidal Q89072 (07TA6)	PG

END OF WORK PACKAGE

INDEX

Subject	WP Sequence No.–Page No.
A	
Additional Authorization List (AAL)	WP 0109–1
Air Cleaner Assembly Service	WP 0091–1
Air Pressure System Troubleshooting Procedures	WP 0084–1
Ambulance Equipment Troubleshooting Procedures	WP 0086–1
Automatic Fire Extinguishing System (AFES) Battery Backup Unit (BBU) Disable and Enable	WP 0102–1
Automatic Fire Extinguishing System (AFES) AND Fire Suppression System (FSS) Troubleshooting Procedures	WP 0082–1
C	
Caging and Uncaging Brakes	WP 0099–1
Circuit Breaker Reset	WP 0095–1
Components of End Item (COEI) and Basic Issue Items (BII) Lists	WP 0108–1
Coolant Service	WP 0093–1
D	
Deaeration Tank Pressure Cap Removal and Installation	WP 0094–1
Description and Use of Operator Controls and Indicators	WP 0004–1
E	
Electrical System Troubleshooting Procedures	WP 0078–1
Emergency Operation – Automatic Fire Suppression System (AFES)/Fire Suppression System (FSS)	WP 0065–1
Emergency Operation – Blast Energy Attenuating Turret Seat (BEATS) Egress	WP 0059–1
Emergency Operation – Emergency Hatch (Roof)	WP 0062–1
Emergency Operation – Engine Out of Fuel (Restart Procedures)	WP 0072–1
Emergency Operation – Flat Tire	WP 0063–1
Emergency Operation – Improved Gunner Restraint System (IGRS) Egress	WP 0060–1
Emergency Operation – Operating Vehicle During Engine Overheating	WP 0069–1
Emergency Operation – Operating Vehicle During Loss of Air System Pressure	WP 0071–1
Emergency Operation – Operating Vehicle During Loss of Oil Pressure	WP 0070–1
Emergency Operation – Portable Fire Extinguisher	WP 0064–1
Emergency Operation – Rear Door/Ramp Emergency Release	WP 0061–1
Emergency Operation – Seat Belt Egress	WP 0058–1
Emergency Operation – Side Doors Egress	WP 0056–1
Emergency Operation – Slave Starting Vehicle	WP 0067–1
Emergency Operation – Transmission Procedures (Limp Mode)	WP 0068–1
Emergency Operation – Vehicle Emergency Egress (VEE) Window Operation	WP 0066–1
Engine Oil Service	WP 0090–1
Engine System Troubleshooting Procedures	WP 0077–1
Equipment Description and Data	WP 0002–1
Expendable and Durable Items List	WP 0110–1
Exterior Battery Box Armor Door Open and Close	WP 0098–1
F	
Fuel Fired Heater Troubleshooting Procedures	WP 0080–1
Fuel/Water Separator Draining	WP 0092–1
G	
General Information	WP 0001–1
L	
Lubrication Instructions	WP 0106–1

INDEX – (Continued)

Subject **WP Sequence No.–Page No.**

O

Objective Gunners Protection Kit (OGPK) Troubleshooting Procedures . . . WP 0085–1
On-Vehicle Equipment Load Plan . . . WP 0074–1
Operation Under Unusual Conditions - Driver Towing Operation . . . WP 0053–1
Operation Under Unusual Conditions – Extreme Cold Starting (Below 32°F [0°C]) . . . WP 0045–1
Operation Under Unusual Conditions – Extreme Heat and/or Dust . . . WP 0043–1
Operation Under Unusual Conditions – Fording . . . WP 0050–1
Operation Under Unusual Conditions – Manual Rear Door/Ramp Operation . . . WP 0055–1
Operation Under Unusual Conditions – Mud, Sand, and/or Snow . . . WP 0044–1
Operation Under Unusual Conditions – Night Vision Operation . . . WP 0049–1
Operation Under Unusual Conditions – Operating Vehicle in Extreme Cold (Below 32°F [0°C]) . . . WP 0046–1
Operation Under Unusual Conditions – Steep Grades (Ascending) . . . WP 0051–1
Operation Under Unusual Conditions – Steep Grades (Descending) . . . WP 0052–1
Operation Under Unusual Conditions – Throttle Idle Control . . . WP 0048–1
Operation Under Unusual Conditions – Tire Chain Installation and Removal . . . WP 0047–1
Operation Under Unusual Conditions - Winch Operation . . . WP 0054–1
Operation Under Usual Conditions – 12V Auxiliary Equipment Outlets . . . WP 0022–1
Operation Under Usual Conditions – 110V Outlets and Power Inverter . . . WP 0020–1
Operation Under Usual Conditions – 110V Power Strip Operation . . . WP 0021–1
Operation Under Usual Conditions – Blackout (B.O.) Operation . . . WP 0038–1
Operation Under Usual Conditions – Blast Energy Attenuating Turret Seat (BEATS) Operation . . . WP 0025–1
Operation Under Usual Conditions – Brake System and Anti-lock Brake System (ABS) Operation . WP 0014–1
Operation Under Usual Conditions – Central Tire Inflation System (CTIS) Operation . . . WP 0035–1
Operation Under Usual Conditions – Cruise Control Operation . . . WP 0032–1
Operation Under Usual Conditions – Driver Seat Adjustment . . . WP 0006–1
Operation Under Usual Conditions – Engine Brake Operation . . . WP 0015–1
Operation Under Usual Conditions – Engine Shutdown . . . WP 0013–1
Operation Under Usual Conditions – Engine Start Procedure – Above 32°F (0°C) . . . WP 0011–1
Operation Under Usual Conditions – Four-Wheel Drive Operation . . . WP 0017–1
Operation Under Usual Conditions – Front Passenger Light Operation . . . WP 0029–1
Operation Under Usual Conditions – Fuel Fired Heater Operation . . . WP 0019–1
Operation Under Usual Conditions – Gunner Platform . . . WP 0026–1
Operation Under Usual Conditions – Hood Operation . . . WP 0033–1
Operation Under Usual Conditions – Improved Gunner Restraint System (IGRS) Operation . . . WP 0024–1
Operation Under Usual Conditions – Life Support System (LSS)/Heating, Ventilation, and Air Conditioning (HVAC) Operation . . . WP 0028–1
Operation Under Usual Conditions – Litter Lifting and Securing Operation . . . WP 0039–1
Operation Under Usual Conditions – Litter Trolley and Rails Operation . . . WP 0040–1
Operation Under Usual Conditions – Medic Seat Adjustment . . . WP 0008–1
Operation Under Usual Conditions – Normal Driving Procedure . . . WP 0012–1
Operation Under Usual Conditions – Objective Gunners Protection Kit (OGPK) Operation . . . WP 0027–1
Operation Under Usual Conditions – Passenger Seat Adjustment . . . WP 0007–1
Operation Under Usual Conditions – Rear Door/Ramp Operation . . . WP 0018–1
Operation Under Usual Conditions – Rear Passenger Lights Operation . . . WP 0030–1
Operation Under Usual Conditions – Red Cross Folding Sign Operation . . . WP 0037–1
Operation Under Usual Conditions – Seat Belt Operation . . . WP 0009–1
Operation Under Usual Conditions – Securing Medical Equipment . . . WP 0041–1
Operation Under Usual Conditions – Side Doors Operation . . . WP 0005–1
Operation Under Usual Conditions – Sliding Hatch (Roof) . . . WP 0023–1
Operation Under Usual Conditions – Spotlight Operation . . . WP 0031–1
Operation Under Usual Conditions – Steering Wheel Adjustment . . . WP 0010–1
Operation Under Usual Conditions – Transmission Operation . . . WP 0016–1
Operation Under Usual Conditions – Vehicle Fueling Operation . . . WP 0034–1

INDEX – (Continued)

Subject	WP Sequence No.–Page No.
P	
Power Steering Fluid Service	WP 0100–1
Preventive Maintenance Checks and Services (PMCS)	WP 0088–1
Preventive Maintenance Checks and Services (PMCS) Introduction	WP 0087–1
R	
References	WP 0107–1
S	
Steering and Suspension Troubleshooting Procedures	WP 0081–1
Stowage and Decal/Date Plate Guide	WP 0073–1
T	
Theory of Operation	WP 0003–1
Tire Inflation Procedure	WP 0097–1
Transmission Fluid Service	WP 0096–1
Transmission Troubleshooting Procedures	WP 0079–1
Troubleshooting Index	WP 0076–1
Troubleshooting Introduction	WP 0075–1
V	
Vehicle Cleaning	WP 0089–1
Vehicle Hoisting Points	WP 0105–1
Vehicle Parking	WP 0104–1
Vehicle Towing	WP 0103–1
W	
Winch Troubleshooting Procedures	WP 0083–1
Windshield Washer Service	WP 0101–1

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS

For use of this form, see AR 25-30; the proponent agency is OAASA.

Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).

DATE
Date you filled out this form.

TO *(Forward to proponent of publication or form) (Include ZIP Code)*
U.S. Army TACOM Life Cycle Management Command
ATTN: AMSTA-LCL-MPP/TECH PUBS
6501 E. 11 Mile Road, Warren, MI 48397-5000

FROM *(Activity and location) (Include ZIP Code)*
Your mailing address

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-2355-444-10	15 DEC 2014	Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given)
	0007-3					*Figure 2, Item 9 should show a lockwasher. Currently shows a flat washer.*
	0018-2					*Cleaning and inspection, Step 6, reference to governor support pin (14) is wrong reference. Reference should be change to (12).*

SAMPLE

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Your Name	*Your Phone Number*	*Your Signature*

TO *(Forward direct to addressee listed in publication)*	**FROM** *(Activity and location) (Include ZIP Code)*	**DATE**
U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	*Your Address*	*Date you filled out this form*

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 9-2355-444-10	15 DEC 2014	Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

SAMPLE

PART III – REMARKS *(Any general remarks, or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
Your Name	*Your Phone Number*	*Your Signature*

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	**DATE**
TO *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	**FROM** *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-2355-444-10		Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO *(Forward direct to addressee listed in publication)*	**FROM** *(Activity and location) (Include ZIP Code)*	**DATE**
U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-2355-444-10		Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks, or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	**DATE**
TO *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	**FROM** *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-2355-444-10		Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO *(Forward direct to addressee listed in publication)*	**FROM** *(Activity and location) (Include ZIP Code)*	**DATE**
U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-2355-444-10		Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remark, or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	**TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION**	**SIGNATURE**

APD V4.00

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is OAASA	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	**DATE**
TO *(Forward to proponent of publication or form) (Include ZIP Code)* U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000	**FROM** *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-2355-444-10		Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

ITEM	PAGE	PARA-GRAPH	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO *(Forward direct to addressee listed in publication)*	**FROM** *(Activity and location) (Include ZIP Code)*	**DATE**
U.S. Army TACOM Life Cycle Management Command ATTN: AMSTA-LCL-MPP/TECH PUBS 6501 E. 11 Mile Road, Warren, MI 48397-5000		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9-2355-444-10		Operator's Manual for Mine Resistant Ambush Protected (MRAP) M1266A1

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks, recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	**TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION**	**SIGNATURE**

APD V4.00

By Order of the Secretary of the Army:

RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Official:

GERALD B. O'KEEFE
Administrative Assistant to the
Secretary of the Army

1435603

Distribution:
Initially published in electronic media only. When funds become available, this publication will be distributed in accordance with the initial distribution number (IDN) 389308 requirements for TM 9-2355-444-10.

THE METRIC SYSTEM AND EQUIVALENTS

Linear Measure

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

Weights

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Pounds
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

Liquid Measure

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

Square Measure

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.0386 Sq Miles

Cubic Measure

1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

Temperature

9/5 °C +32 = °F
5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius

APPROXIMATE CONVERSION FACTORS

To Change	To	Multiply By
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Sq Inches	Sq Centimeters	6.451
Sq Feet	Sq Meters	0.093
Sq Yards	Sq Meters	0.836
Sq Miles	Sq Kilometers	2.590
Acres	Sq Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Sq Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

To Change	To	Multiply By
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Sq Centimeters	Sq Inches	0.155
Sq Meters	Sq Feet	10.764
Sq Meters	Sq Yards	1.196
Sq Kilometers	Sq Miles	0.386
Sq Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Sq Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

PIN: 087936